

Family structure and psychological distress: Moderating effects of sex of siblings in samples with separated parents.

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1 Thesis abstract

Research has revealed that siblings may moderate the negative impact of parental divorce however, relatively little is known about the extent of influence siblings may have upon adjustment following parental divorce. Likewise previous research has acknowledged variations in sibling relationships as a function of sex, but little is known about the significance of sibling sex constellation upon individual outcomes, particularly following parental divorce. The relationship between the sex constellation of siblings in a family (taking sex of participants into account), psychological distress, the psychosocial correlates of distress, family environment, and family structure (intact versus non-intact) was investigated in two studies of 708 and 574 emerging adults respectively. Study 1 was a student sample of 294 males and 414 females and assessed parental relationship and sibling sex constellation in relation to participants' perceptions of their family environment, social support, perceived control, optimism, pessimism and psychological distress. Multivariate analysis of variance (Manova) produced significant main effects and interactions which show that sibling sex constellation impacts on psychological distress, the psychosocial correlates of distress, and the family environment. Furthermore, sibling sex constellation appears to moderate the impact of intact versus non-intact home on these variables. These findings were further supported by multiple regression analysis (MRA). Study 2 replicated Study 1 in a general population sample of 251 males and 323 females and, in addition, explored the sibling sex constellation effects on achievement motivation, problem-solving style and coping. The majority of the effects from Study 1 were corroborated and main effects and interactions using Manova were shown for achievement motivation and problem-solving style, while results on coping were less clear. Again these findings were supported by MRA. It appears that the presence of female siblings has a positive impact upon adjustment and associated variables, while the presence of male siblings has the reverse effect. These findings have implications for family therapy and counselling and can usefully inform the practice of anyone working with families and children.

2 Preface

Much of the early research on families took place within the discipline of sociology (for example Burgess, 1926). This research, which is reviewed in Chapter 1 & 2, documented the influence of social groups, such as the family, upon individual development. Thus the centrality of the family's role in transmitting societal influences to the individual was recognised. Then when family therapy began, in the mid 1950's, the family was also recognised as a major influence upon an individual's mental health (Akamatsu & Laing, 1992).

Developmental psychologists and ethologists have come to view the family as a relational environment with systems qualities, meaning that the family is viewed as a hierarchically organised system, comprised of subsystems (parental, marital, and sibling) placed in the context of larger systems (such as community and society). Interactions take place both within and across these systems affecting the development of each individual (Minuchin, 1988). As such, disturbances in the parents' marital relationship, such as conflict or divorce, affect both the offspring's sibling relationship and the psychological and social development of each individual.

The transmission of effects from the parent's marital system to the individual is explored in Chapter 3. Research conducted on the effects of family structure and process; namely interparental conflict and divorce, upon the adjustment of individual offspring is reviewed. Theories of methods by which disturbances in the interparental relationship influence individual offspring's psychosocial health are reviewed, and the comparative influence of interparental conflict and divorce discussed. The literature regarding possible differential effects of parental divorce upon the sexes is also reviewed, along with posited theories for those differential effects.

The effect of family structure and process upon the relationship between siblings forms the focus of chapter 4. The influences of both the parent-child relationships and the interparental relationship upon sibling relations are discussed, with a specific emphasis on the quality of sibling relationships following parental divorce. The focus upon

siblings is furthered in chapter 5; which examines literature on the effects that sibling relationships have upon the psychosocial adjustment of the individuals involved. The literature concerned with siblings' potential roles as socialization agents (both directly and indirectly via relationship processes such as conflict) and as sources of support is reviewed. In addition both sex differences in sibling relationships and the developmental stability of sibling relationships are considered.

Having provided a background for the current programme of study in addressing the influence of family structure and process; in terms of interparental and sibling relationships, upon individual adjustment chapter 6 introduces the concepts of stress and coping with distress; used in this thesis as an index of psychosocial adjustment. The categorisation of coping styles is presented, along with research conducted on a number of known psychosocial correlates of stress.

The rationale for the current programme of study and the overall research questions are presented in chapter 7. Following this Study 1, presented in Chapter 8, aimed to provide initial insight into the possible effects of sibling sex constellation (the combination of both a participant's sex and that of their siblings) upon distress levels, the psychosocial correlates of stress introduced in chapter 6, and their perception of the family environment in which they grew up. Findings from Study 1 were discussed in relation to previous research and then areas of interest for further study were highlighted which leads to Study 2 (presented in Chapter 9), which aimed both to replicate the substantial findings of Study 1, and to extend them by including aspects of the coping process and an additional psychosocial variable associated with stress and well-being. Chapter 10 goes on to look specifically at participants from non-intact homes and explores further the effect of family break up.

The final chapters (chapters 11 and 12) initially summarize the findings from both studies. The implications and applications of these findings are considered; specifically in relation to how the knowledge of effects of sibling sex constellation could be used to increase positive adjustment and to reduce distress, before limitations are highlighted and suggestions for further research are made.

3 Effects of family structure and process on adjustment

This chapter reviews the literature concerning the effects of the family context upon an individual's adjustment. The focus of this chapter is on the effects of parental conflict and divorce upon offspring.

3.1 Parental conflict and offspring adjustment

Witnessing parental conflict is a normal part of family life for children. Some forms of parental conflict (resolved conflicts) actually promote positive child adjustment. The expression of both positive and negative emotions (i.e. marital expressiveness) is associated with social competence in children (Cassidy, Parke, Butkovsky & Braungart, 1992). Furthermore, expressions of both negative and positive affect may elicit family discussions of emotion and its causes and consequences, which are linked with subsequent increases in socioemotional understanding (Dunn, Brown, & Beardsall, 1991). However, unresolved or destructive interparental conflict places offspring at risk of adverse psychological consequences. Hostile interparental conflict is associated with emotional problems; internalizing symptoms such as depression and anxiety, behavioural problems; externalizing behaviours such as aggression, delinquency, and deviance, and social problems; poor social competence resulting in poor peer relations (Buehler et al., 1997). Two distinct waves of research have taken place in this area, the first documenting the effects of interparental conflict upon child adjustment, and the second in the mid 1990's proposing theoretical models of the processes involved. The literature from each wave of research will be reviewed in the next two sections.

3.1.1 Effects of parental conflict on adjustment of offspring

The first generation of research in the area of parental conflict and child adjustment sought to establish marital conflict as a risk factor for child maladjustment. Internalizing and externalizing problem behaviours are important broad band indicators of maladjustment and, as such, are salient mental health outcomes. Internalizing refers to psychological states of well-being such as depressed affect, anxiety, and low self-

esteem which commonly lead to depression, withdrawal and somatic complaints. Examples of externalizing problems are aggression, delinquency, and substance abuse.

A substantial body of literature has shown a positive association between interparental conflict and maladjustment of offspring. However it was initially thought that this association was only present in maladjustment behaviours in the externalizing realm. Indeed the earliest narrative literature review in this area concluded that interparental conflict was “related more strongly to children’s problems of undercontrol than of overcontrol” (Emery, 1982, p.316). This conclusion was reached because each and every study conducted at that point had consistently found interparental conflict to be positively associated with offspring’s externalizing problems, whereas the findings for an association with internalizing problems were inconsistent. A second narrative literature review (Grych & Fincham, 1990) concluded that the more recent literature indicated a relationship between interparental conflict and both internalizing and externalizing offspring problems. However a meta-analysis conducted in 1990 was specifically limited to externalizing problems only, due to both the greater focus in the literature on externalizing problems, and to the difficulties in classifying the diverse measures of internalizing behaviours that had been employed in the studies conducted (Reid & Crisafulli, 1990). Buehler et al. (1997) conducted a meta-analysis which was based on 68 studies published in the 6 years following Reid and Crisafulli’s analysis, during which research on interparental conflict and broad band indicators of maladjustment, including internalizing behaviours, increased. This second, later, meta-analysis suggested a stronger association between interparental conflict and offspring maladjustment than reported by Reid and Crisafulli, and provided evidence that the effect described the positive association between interparental conflict and offspring internalizing problems in addition to externalizing problems (Buehler et al., 1997). Recent research has shown consistent support for positive associations between interparental conflict and both offspring’s emotional problems; internalizing symptoms, and offspring’s behavioural problems; externalizing behaviours. The range of maladjustment indicators assessed in the association between interparental conflict and adjustment has also been increased to include social problems; such as decreased social competence (Long, Forehand, Fauber, & Brody, 1987) and increased conflict in

romantic relationships (Stocker & Richmond, 2007), academic problems, and even problems with psychobiological functioning (Cummings & Davies, 2002).

3.1.1.1 Effects of different styles of parental conflict

The literature points to the existence of at least two hostile interparental conflict styles; overt and covert (Buehler et al., 1997). An overt style is hostile behaviours and affect that indicate direct manifestations of negative connections between parents; examples include contempt, derision, insulting, screaming, threatening, slapping, and hitting. A covert conflict style is hostile behaviours and affect that reflect passive-aggressive ways of managing conflict between parents. Two components of covert conflict have been identified; global covert behaviours and triangulation of children. Global covert behaviours include resentment and unspoken tensions manifested between parents in subtle, indirect behaviours and affect that do not involve the children. Triangulation includes behaviours such as trying to get the child to side with one parent, using the child to get information about the other parent, having the child carry messages to the other parent, and denigrating the other parent in the presence of the child both in and out of the presence of the other parent. Triangulation involves boundary violations and therefore has a perceptual component in which youths feels caught, trapped, and torn between parents (Amato & Afifi, 2006). There has been substantially more research conducted on the association between parents' use of overt conflict style and youth problem behaviour than on their use of covert conflict style and youth behaviour (Buehler et al., 1997).

Buehler et al. (1998) hypothesized that the effects of interparental conflict styles on youth problem behaviour may be specialized, with overt interparental conflict leading to offspring externalizing behaviour and covert interparental conflict leading to offspring internalizing behaviour. Two theoretical explanations for specialization were proposed; modelling and emotional arousal. Modelling may explain such specialized effects because the behaviours associated with overt and covert interparental conflict styles share defining characteristics with externalizing and internalizing problems respectively. Both an overt conflict style and youth externalizing behaviour are

connected to acts of aggression (verbal or physical) and both a covert conflict style and youth internalizing problems are connected to feelings of anxiety, are passive techniques, and have an indirect quality. The second theoretical explanation centres on children's responses to emotional arousal. Children who witness hostile interparental conflict are vulnerable to negative emotional arousal, exposure to overt interparental conflict may create anger and fear which, in turn, exacerbates aggression. Exposure to covert conflict may create feelings of anxiety and confusion, leading to youth turning their feelings, depressing their mood and leading to internalizing problems. Buehler et al. (1998) found support for their hypothesis that the associations between interparental conflict styles and youth problem behaviour are specialized. In their sample of youth parents' use of an overt conflict style was more strongly associated with youth externalizing problems than internalizing problems. Similarly, parents' use of a covert conflict style was associated with youth internalizing problems, but their use of an overt conflict style was not (Buehler et al., 1998; Kaczynski, Lindahl, Malik, & Laurenceau, 2006). The specialized associations were found in children of both sexes from both intact and divorced families. Further support for the specialization hypothesis has been found in recent studies of youths' triangulation in interparental conflict, an indicator of covert conflict. Youth perceived triangulation has been found to mediate the association between marital hostility and offspring maladjustment; specifically internalizing problems (Franck & Buehler, 2007; Amato & Afifi, 2006).

3.1.2 Theories of methods of influence

Once researchers had documented and replicated the associations between interparental conflict and children's psychological functioning a second generation of research began whereby researchers focussed on the processes and conditions responsible for the association (Fincham, 1994). This second wave of research led to the proposal of a number of process models accounting for the relationship between interparental conflict and child adjustment and specifying conditions that may exacerbate or attenuate the risk posed by interparental conflict. There are two types of process models; mediational models and moderator models. Mediational models attempt to determine how or why a particular factor, in this case interparental conflict, affects another, in this case child

adjustment. Mediators are therefore the generative mechanisms through which independent or predictor variables affect outcomes (Baron & Kenny, 1986). Moderator models attempt to determine when a factor is most or least likely to be associated with a particular outcome. Moderators therefore affect the strength and direction of the relationship between an independent variable (interparental conflict) and a dependent variable (child adjustment) (Baron & Kenny, 1986). Protective factors are moderators that, in this case, reduce the association between parental conflict and child maladjustment. Conversely potentiating factors are moderators that increase the risk posed by interparental conflict for child maladjustment.

Key themes of the second wave of research in this area have been: identifying the processes which interparental conflict may affect within the child which increase vulnerability to maladjustment (intrachild mediators); identifying processes within the family that may account for the risk posed by interparental conflict (family mediators); and identifying family characteristics that may reduce or amplify the relationship between interparental conflict and child adjustment (moderators). Process models of interparental conflict have advanced the understanding of these relationships (Davies, Harold, Goeke-Morey, & Cummings, 2002).

3.1.2.1 The Cognitive Contextual Framework

The cognitive contextual framework emphasizes the cognitive aspects of the child's appraisals of the conflict. It was first presented in 1990 by Grych and Fincham and was the first heuristic device to delineate the processes that occur when a child observes interparental conflict. The framework was then expanded upon in 2000 by Grych, Fincham, Jouriles, and McDonald to include specific child appraisals as mediators of the association between interparental conflict and adjustment problems.

In the development of the original framework Grych and Fincham (1990) proposed that coping with marital conflict was a task that involved the regulation of emotional arousal and the enactment of effective behavioural strategies, and that cognition played a central role in both of these processes. Interparental conflict was conceptualized as a stressor

which the child attempts to understand and cope with. Both cognition and affect serve appraisal functions which guide the child's coping behaviour. Firstly, through primary processing, the child becomes aware of the stressor and experiences an initial affective reaction to it (affect). If the conflict is not evaluated negatively or considered important then attention will shift away from it. If, however, the conflict is perceived as negative, significant, or self-relevant, then further processing will occur. This is called secondary processing, during which the child tries to understand why the conflict is occurring and what they may do in response. Secondary processing therefore involves making an attribution for the cause of the conflict (causal attribution), perhaps ascribing responsibility and blame (responsibility attribution), and then generating expectations of the efficacy of their potential coping responses (efficacy expectation). The secondary processing combined with the affect from the primary processing, guide the child's coping attempts. Successful coping leads to a reduction of negative affect whereas unsuccessful coping maintains or perhaps even increases the child's distress.

Grych, Fincham, Jouriles, and McDonald (2000) expanded upon Grych and Fincham's (1990) original model in two ways: They proposed a process by which children's specific appraisals of threat and self blame mediate, and therefore play a causal role in, the association between interparental conflict and maladjustment; and they stated that this mediational pathway would be specific to internalizing problems, not to externalizing problems. Firstly, exposure to unresolved or high levels of interparental conflict heightens the child's perceptions of threat caused by conflicts, the perceived threat is characterized by the child's analysis of how threatening the conflict is to their own well-being and ability to successfully cope with the conflict (Davies, Harold, Goeke-Morey, Marcie, & Cummings, 2002). The child's perceptions of threat then increase the risk for internalizing problems by increasing feelings of anxiety and helplessness. Secondly, a child exposed to angry, hostile, and unresolved conflicts is likely to assume the role of parental peacekeeper, arbitrator, and confidante. However their involvement is not likely to play a significant role in resolving disputes, therefore the child may believe that they are partially to blame for the continuing conflict. This perceived self blame plays an important role in the development of internalizing problems by increasing feelings of guilt, helplessness, and poor self-worth. The authors

of the refinements or adaptations to the original cognitive contextual framework suggest that other processes, such as modelling, disrupted parent-child relationships, and emotional dysregulation may be responsible for the externalizing problems which are also associated with interparental conflict.

3.1.2.2 The Emotional Security Hypothesis

The emotional security hypothesis proposed by Davies and Cummings (1994) builds on attachment theory, positing that preserving a sense of security is an important goal that organises a child's emotions, cognitions, and behaviour (Davies, Harold, Goeke-Morey, Marcie, & Cummings, 2002). However, in contrast to attachment theory the emotional security hypothesis posits that the child's emotional security is a significant goal across multiple family relationships, and is therefore salient in the context of interparental relationship difficulties (Davies & Cummings, 1994). According to the emotional security hypothesis children's emotional security is a function of three 'component regulatory systems;' emotional regulation, regulation of exposure to family affect, and internal representation of family relations. Interparental conflict compromises all three of these systems directly and also indirectly via disturbances in the parent-child relationship (Cox, Paley, & Harter, 2001). The three regulatory systems of emotional security both regulate and are regulated by, emotional security (Cummings & Davies, 1996). They are distinct subsystems that may operate separately, or in combination, in the expression of emotional security (Davies & Cummings, 1998).

According to the emotional security hypothesis, implications of marital conflict for child adjustment derive from emotional security supporting the child's ability to cope effectively with everyday issues. Emotional insecurity thus promotes less effective coping in response to daily stresses, and the development of internalizing symptoms and externalizing problems (Davies & Cummings, 1994; Harold, Shelton, Goeke-Morey, & Cummings, 2004). Therefore marital conflict is a catalyst that activates children's emotional, cognitive, and behavioural responses in a way that impacts their evaluations of other family relationships which, in turn affects their adjustment (Harold, Shelton, Goeke-Morey, & Cummings, 2004), as such, children's emotional security plays a

mediational role between marital functioning and child adjustment (Davies & Cummings, 1998). Emotional security is conceptualized as a control system in which the goal of security regulates and is regulated by the three component processes; emotional regulation, behaviour regulation, and cognitive representations. Therefore the goal of regaining or preserving emotional security precipitates responding across all three processes (Davies, Harold, Goeke-Morey, Marcie, & Cummings, 2002).

First, exposure to destructive marital conflict induces insecurity and emotional reactivity; characterized by heightened levels of fear, distress, vigilance, and covert hostility (Davies & Cummings, 1998). These heightened levels of negative emotional reactivity have been posited to be precursors of long term psychological problems. Second, emotional security serves a motivational function by guiding children to regulate their exposure to parental negative affect, the theory being that they can increase their sense of emotional security through behaviours that regulate, reduce, or terminate their parents' conflicts. Insecurity is specifically thought to increase the child's efforts to become involved in or to avoid parental conflicts; both of these behaviours serve as signs that the goal of preserving security is activated. However multiple, prolonged attempts at intervening or avoiding which require high levels of emotional or psychological investment are predicted to signify prolonged difficulties in regaining security. Thus regulation of exposure to parental affect may serve as a successful way of reducing exposure to stress or, alternatively, a dysfunctional regulatory process that increases psychological risk for the child. The third component process of emotional security is children's internal representations of marital and family relations. Internal representations are the child's analyses of the consequences that interparental conflict has for the child's own well-being, and for the well-being of attachment figures in the family. Actively processing the meaning of parental conflict at this higher order level may serve as a cognitive map or alarm for identifying interparental events that may undermine the welfare of the self and the family. Thus hostile representational systems primed to the possibility of danger (pessimistic expectancies regarding the outcome of parental conflict) may help children from high conflict homes gain security by enhancing their ability to proactively protect themselves in the family context. However, insecure or hostile representations are themselves

hypothesized to elevate children's risk for adjustment problems (Davies & Cummings, 1994).

Similarly to the adapted cognitive contextual framework, the emotional security hypothesis was designed to complement other theories, conceptualizing emotional security as a partial, rather than full, mediator of marital conflict (Davies & Cummings, 1998). Therefore cognitive and coping processes in the cognitive-contextual framework (Grych & Fincham, 1990), modelling in social learning theory (Emery, 1982), and parenting practices in family systems theory (Fauber, Forehand, Thomas, & Wierson, 1990) are also considered to be potentially important mediators of marital conflict.

3.1.2.3 Social Learning Theory

Bandura's (1973) social learning theory emphasizes children's responses being learnt in the context of interparental interactions. According to the principles of social learning theory observational learning or modelling is regarded as more influential in organizing the child's responses than anything else. In the context of interparental conflict, the child learns new ways of engaging in aggressive behaviour by vicariously observing their parents engage in aggressive or hostile tactics (Emery, 1982). This happens in any of three ways; precise imitation of specific hostile behaviours displayed by the parents; acquisition of generalized scripts or abstract rules for engaging in hostile behaviours; or reduction of inhibitions about aggressing (Davies, Harold, Goeke-Morey, Marcie, & Cummings, 2002; Margolin, Oliver, & Medina, 2001). The modelling processes in social learning theory vary in strength according to the degree to which the child identifies with, and values a potential adult model. Children are proposed to be more likely to model the behaviours of the same sex parent than the opposite sex parent (Emery, 1982). Sex relevant scripts are incorporated into their identities by early childhood and children therefore use sex as a basis for selecting which parental behaviours to imitate during interparental conflict (Crockenberg & Langrock, 2001; Davies & Lindsay, 2001). The quality of the relationship between parent and child is proposed to be another moderator in the modelling process; children have been found to imitate behaviours more readily when they have a warm and close relationship with the

adults. Therefore, from a social learning perspective, the concordance between parental and child aggression or hostility should be stronger for children who have warm, close relationships with their parents. However, although the association between some forms of parent and child aversive behaviours (such as substance use) have been shown to be significantly stronger when the parents and child have warm relationships (Andrews, Hops, & Duncan, 1997), similar moderating effects have not yet been consistently demonstrated regarding pathways between hostile or aggressive interparental and child behaviours (Formosa, Gonzales, & Aiken, 2000), suggesting the existence of processes other than those accounted for by social learning theory.

3.1.2.4 Indirect effects models

Several process models have hypothesized that disruptions in the parent-child relationship and thus disruptions in parenting itself account for the association between interparental conflict and child maladjustment. These indirect effects models all share the assumption that interparental conflict affects child adjustment by disrupting the parent-child relationships. This theory is also known as the spillover hypothesis and as such is one of the most widely held views regarding how marital conflict impacts other family processes (Kaczynski, Lindahl, Malik, & Laurenceau, 2006). The two types of parent-child processes that have received the most attention in the literature are parenting practices, and parent-child attachment relationships (Davies, Harold, Goeke-Morey, Marcie, & Cummings, 2002).

Indirect effects models of parenting suggest that interparental conflict is associated with disruptions in one or more domains of parenting, such as behavioural control or warmth, which increase the child's risk for adjustment problems; indexed by internalizing and externalizing symptoms. Empirical support for these pathways is strong; parental emotional unavailability, poor behavioural control, and excessive psychological control have been shown to account for at least part of the association between interparental conflict and child adjustment (Gonzales, Pitts, Hill, & Roosa, 2000; Erel, Margolin, & John, 1998; Fauber, Forehand, Thomas, & Wierson, 1990).

Attachment theorists suggest that interparental conflict is associated with child adjustment through insecure parent-child attachments. Support for this process has shown that interparental conflict and subsequent disrupted parenting affect the child's sense of security in parent-child attachment relationships and this, in turn, is associated with a wide range of developmental problems (Davies, Harold, Goeke-Morey, Marcie, & Cummings, 2002). The emotional security hypothesis described earlier is also based on attachment theory and therefore provides further support for this hypothesized process.

Indirect effects models agree that disruption in the parent-child relationship mediates the effects of interparental conflict upon adjustment. However, such models differ in the strength they ascribe to the mediating effects of parenting processes. Weak models of indirect effects, such as the emotional security hypothesis, propose that parenting is one of many processes that may account for the relationship between interparental conflict and child adjustment. Thus, parenting is presumed to be a partial, rather than a full, mediator of the risk posed by interparental conflict (Grych & Fincham, 1990). In contrast, strong models of indirect effects, such as Family Systems Theory, presume that parenting is the sole mediator of interparental conflict. Parenting processes are thus theorized to provide a complete explanation for the association between interparental conflict and child maladjustment (Erel, Margolin, & John, 1998; Fauber & Long, 1991). Research supporting the weak and strong indirect effects model is equivocal; as yet research has not definitively addressed which of the indirect effects models provides a better representation of the data in predicting children's long term adjustment.

3.1.3 The moderating role of sex

Conceptual frameworks have cast child sex as a moderator that may help to explain some of the variability in child outcomes associated with interparental conflict (Zimet & Jacob, 2001). Two theories exist to explain sex's moderating effects in the link between interparental conflict and child adjustment; the male vulnerability model, and the differential reactivity model. The male vulnerability model characterizes the relationship between interparental conflict and child maladjustment as being stronger

for boys, meaning that boys are more susceptible to the harmful effects of interparental conflict than girls. The differential reactivity model hypothesizes that boys and girls may experience relatively comparable levels of distress in response to interparental conflict, but this distress is manifested in different ways. Therefore in accordance with sex differences in the prevalence of externalizing and internalizing symptoms boys exposed to interparental conflict may express their distress through aggression, anger, behaviour dysregulation, and externalizing symptoms, whereas girls' distress as a result of interparental conflict may take the form of fear, over involvement in parental problems and ultimately internalizing symptoms (Davies & Lindsay, 2001).

Although many studies have provided support for the male vulnerability model (e.g. Kerig, 1996; 1999; Jouriles & Norwood, 1995), this may be due to an artefact in methodological designs. Given the greater tendency for boys to exhibit externalizing symptoms and for girls to exhibit internalizing symptoms, biases toward assessment of externalizing symptoms may have yielded disproportionately low samples of girls or range restrictions in the girls' maladjustment scores. This may explain the failure to detect a consistent relationship between interparental conflict and girls' adjustment. Similarly because parents and teachers have difficulty evaluating the more covert symptoms of internalizing problems, heavy reliance on adult reports of child maladjustment may have compromised the utility of internalizing symptomatology measures. In support of these methodological limitations recent studies that broaden the assessment of adjustment problems and use child self report measures have found that boys and girls exhibit similar vulnerability to the harmful effects of interparental conflict (Davies & Lindsay, 2001).

There have been continued inconsistencies in findings regarding the role of sex in the relationship between interparental conflict and adjustment. For example, other findings have indicated that interparental conflict may be a stronger predictor of maladjustment for girls than for boys (Davies & Lindsay, 2004; Unger, Brown, Tressel, & McLeod, 2000). These inconsistencies led to developmental models postulating that the direction and magnitude of sex-linked vulnerabilities to interparental conflict may depend on the developmental stage of the child. According to these models boys may exhibit

significantly greater vulnerability than girls to family stressors, such as interparental conflict, in early childhood. Consistent with this hypothesis studies previously described as supporting the male vulnerability hypothesis have predominantly been conducted with samples of children and pre-adolescents (e.g. Kerig, 1996; 1999; Jouriles & Norwood, 1995). Trends in sex specific vulnerability to family adversity are then hypothesized to reverse during adolescence, with girls becoming more vulnerable to interparental conflict than boys at this developmental stage. Indeed, consistent with this hypothesis, findings from studies show stronger links between interparental conflict and maladjustment for adolescent girls than for adolescent boys (e.g. Davies & Lindsay, 2004; Unger, Brown, Tressel, & McLeod, 2000; Davies & Windle, 1997).

The sex intensification hypothesis provides a theory for the mechanisms underlying the reversal of sex vulnerability in adolescence. According to this theory, progressively greater biological differences between the two sexes during early adolescence prompt greater socialization pressures to conform to conventional sex roles. As a result, girls experience increasingly higher levels of communion and interpersonal concern in close relationships (Richmond & Stocker, 2007). By virtue of this greater connection, adolescent girls are hypothesized to have higher psychological and emotional stakes in the family than their male counterparts, therefore heightening adolescent girls' vulnerability to interparental adversity. Likewise, the gender intensification hypothesis also suggests that boys' greater dispositions toward agency (which can be defined as self-sufficiency), or the interest in the self as an individual, may account for why they are more protected from the risk posed by interparental conflict than are girls during adolescence (Davies & Lindsay, 2004). It is apparent from research in the area that sex is a moderator of vulnerability to maladjustment as a result of interparental conflict. However it remains a partial moderator and is itself moderated by developmental stage, accordingly other theoretical explanations merit consideration.

3.2 Effects of parental conflict versus divorce

It was long assumed in this area of research that parental marital conflict has long term negative consequences only because of its association with parental divorce (Amato, 2006). However not all high discord marriages end in divorce and not all divorces are preceded by an extended period of overt discord. This suggests that although parental conflict and divorce are frequent concomitants they may be separately and therefore perhaps differentially, associated with child adjustment (Booth & Amato, 2001). Indeed, overall the existing evidence indicates that both parental divorce and parental discord predict a variety of problems for offspring in later adulthood. Amato (2006) presented results from a twenty year longitudinal study on marital discord, divorce, and children's well-being across two generations. For some outcomes, such as psychological well-being, the effect sizes for discord and divorce were comparable. For relations with fathers however, the effect size for divorce was substantially larger than the effect size for discord; children with divorced parents had significantly poorer relationships with their fathers than did children with discordant married parents. In addition discord was not related to as many outcomes as was divorce; children with divorced parents were lower in educational attainment and higher in relationship disruptions than children with discordant married parents. Thus Amato's findings suggest that although marital discord and divorce are both childhood risk factors, and are therefore both associated with multiple problematic outcomes among adult offspring, divorce is associated with a broader range of problems in the long term (Amato, 2006).

3.2.1 The conflict perspective

Early studies provide evidence that continued interparental conflict after divorce exacerbates negative child adjustment (Hetherington & Clingempeel, 1989) whereas such behavioural problems decrease when conflict decreases after divorce (Hetherington, Cox, & Cox, 1982, as cited in Zimet & Jacob, 2001). However more recent studies have found that covert conflict processes continue to exist in divorced families as well as intact high conflict families (Jenkins & Smith, 1991; Kerig, 1995). Indeed, Buehler et al. (1998) not only found covert conflict in both types of families,

but also showed the associations between covert conflict interactions and youth problem behaviour to be similar in both family types.

There are a number of reasons why interparental conflict might be expected to have a larger impact in divorced than non-divorced family situations. Co-parenting necessitates continuing ties between the once conflicting parties; therefore the opportunity for continued conflict remains. Conflict after divorce tends to be more intense and sustained, the conflict is more likely to be over child related issues, and divorced parents are more likely to use destructive, ineffective conflict resolution techniques. All of these factors are linked to worse outcomes for offspring in the face of interparental conflict (Buchanan & Heiges, 2001; Grych & Fincham, 1993). Furthermore, continued interparental conflict post divorce is more likely to be accompanied by other life stressors such as parental depression (Demo & Acock, 1996) and financial difficulties (Buchanan & Heiges, 2001); thus stressors experienced both during and following divorce may increase the children's vulnerability and undermine their coping resources. This is known as a 'double dose' of stressors because of the combined negative effects of divorce and interparental conflict (Walper & Beckh, 2006). In contrast, an opposing theory exists whereby the negative effects of interparental conflict are assumed to be weaker in divorced families than in intact families. This is known as the 'exposure hypothesis' (Walper & Beckh, 2006) which postulates that children in high conflict, intact homes are likely to be exposed to interparental conflict more frequently than children of divorce, and that the increased exposure to conflict increases maladjustment levels in children from intact, high conflict families.

Few studies have explicitly compared the conflict-adjustment link by family structure. Of those that have most show the link to be of a similar size in both intact and divorced homes (Walper & Beckh, 2006; Vandewater & Lansford, 1998; Borrine, Handal, Brown, & Searight, 1991). However some exceptions do exist, most of which provide support for the double dose theory; showing a stronger link between interparental conflict and adjustment problems among children of divorce (Forehand et al., 1991; Fauber, Forehand, Thomas, & Wierson, 1990; Forehand, McCombs, Long, Brody, &

Fauber, 1988). Following such findings it was suggested that interparental conflict is more detrimental to the family environment in divorced families because the positive aspects of the parental relationship are not present to offset the conflict (Forehand et al., 1991). The findings from such studies suggest that, in some instances, divorce “effects” partially reflect effects of continued interparental conflict after divorce; thus pointing to an important role for interparental conflict in offspring’s adjustment after parental divorce.

3.2.2 The parental absence perspective

Amato and Keith (1991) found the strongest support for the conflict perspective in explaining reduced adjustment and well-being among children of divorce, however they also found some support for the ‘parental absence perspective’, which suggests that the absence of one biological parent in the home explains some of the effects of parental divorce on offspring adjustment (Storksen, Roysamb, Moum, & Tambs, 2005). Divorce requires an adjustment to the loss of a parental figure in the household, typically the father. Many studies indicate that the long-term consequences for adult children of divorce are partly influenced by aspects of parent-child contact such as closeness to their father and regularity of contact with the non-resident parent (King & Sobolewski, 2006; Amato & Gilbreth, 1999; O’Connor, Thorpe, Dunn, & Golding, 1999; Laumann-Billings & Emery, 2000).

It is possible that offspring may perceive less time spent with the non-custodial parent as a loss of parental support (Boyce Rodgers & Rose, 2002), parental absence is negatively associated with involvement, closeness, supervision and monitoring (Demuth & Brown, 2004). Research indicates that the reduced availability of a parent due to divorce threatens a child’s emotional security in a similar manner to interparental conflict. Recent research in the area suggests that both interparental conflict and the loss of a parent from the family home due to divorce harm the child’s emotional security, which in turn completely mediates the effects of parental divorce upon health (Fabricius & Luecken, 2007). Therefore the evidence provided by research in the area suggests that the absence of a biological parent in the home, and not just parental

conflict prior to and following divorce, may explain some of the effects of parental divorce on adjustment and well-being. It therefore appears likely that the combination of these two factors may account for the greater effects of parental divorce compared to parental conflict. The following section reviews the literature that investigates the relationship between parental divorce and offspring adjustment.

3.3 Parental divorce and adjustment

It is well documented that children of divorced parents are at an increased risk of adjustment problems in childhood, adolescence, and adulthood. The greatest effects of parental divorce on adjustment have been found for externalizing disorders involving antisocial behaviour, a lack of self-regulation, low responsibility, diminished cognitive agency and achievement. Parental divorce is also associated with internalizing disorders such as anxiety, depression, and problems with social relationships. Children of divorced parents are therefore found to be less socially, emotionally, and academically well-adjusted than children from non-divorced families (Hetherington & Stanley-Hagan, 1999; Hetherington, Bridges, & Insabella, 1998). Divorce thrusts the family into turmoil and imbalance forcing it to negotiate changes in its system and subsystems in order to obtain a new homeostasis, subsequently affecting the individuals within those systems (Guttman & Rosenberg, 2003). Regardless of the source of such 'divorce effects' (for example interparental conflict both prior to and post divorce, the absence of a biological parent from the home, changes in socioeconomic status) parental divorce is deemed a 'stressful life event' for children (Gass, Jenkins, & Dunn, 2007). Indeed, research has shown that parental divorce is an indicator of sufficient stress in childhood for its influences to persist well into adulthood (Huurre, Junkkari, & Aro, 2006) suggesting that this event may affect an individual's life even after they have grown up, left home, and married (Cherlin, Chase-Lansdale, & McRae, 1998). In support of this hypothesis a 25 year sociological review suggests that parental divorce is a life transforming experience for the child rather than an acute stressor from which the child recovers (Wallerstein & Lewis, 2004). The life-course disruption hypothesis proposes that parental divorce affects adult adjustment by disrupting the course of

socioeconomic and interpersonal development (Ross & Mirowsky, 1999) the consequences of which affect adjustment in adulthood. This hypothesis is supported by numerous studies finding that parental divorce has negative socioeconomic and interpersonal consequences for adult children, both of which affect psychosocial adjustment (for example Amato, 2006; 2001; Amato & Keith, 1991).

3.3.1 The effects of parental divorce across the life course

Research findings indicate that younger children are more vulnerable to behaviour problems, emotional disturbances, and adjustment problems following parental divorce (Clarke-Stewart, Vandell, McCartney, Owen, & Booth, 2000). Parental divorce during childhood is related to more adverse effects on internalizing and externalizing problems than is later parental divorce, which is related to more adverse effects on academic achievement (Lansford et al., 2006). It is suggested that potential contributors to children's coping with parental divorce (such as the ability to understand the separation and manage the non-resident parent situation) are not evident prior to adolescence (Cheng, Dunn, O'Connor, Golding, & the ALSPAC Study Team, 2006).

Conceptually it may be that the further along a given trajectory one is when the divorce occurs the less likely it will be that the divorce will deflect the path of the trajectory. This would suggest that divorce will have larger effects on adjustment trajectories for younger than older children, which does seem to be the case for behavioural problems. However, it is equally possible that the timing of divorce affects trajectories of different aspects of adjustment in different ways; for example offspring experiencing parental divorce during adolescence may be more affected in domains that are particularly salient in adolescence, such as academic achievement, increasing independence, and emerging romantic relationships (Lansford et al., 2006). Indeed, conduct problems do not form the most pronounced effect of parental divorce during adolescence (Storken, Roysamb, Holmen, & Tambs, 2006); instead normative developmental tasks of adolescence such as academic or vocational attainment and the formation of intimate relationships are more adversely affected (Hetherington, Bridges, & Insabella, 1998; Storksen, Roysamb, Holmen, & Tambs, 2006; Lansford et al., 2006). The

consequences of such developmental difficulties may precipitate or exacerbate further adjustment problems in adolescents of divorced parents (Hetherington & Stanley-Hagan, 1999).

Results of some studies have suggested that later parental divorce (i.e. during offspring's adolescence) may be more deleterious than parental divorce during an earlier stage of development (Chase-Lansdale, Cherlin, & Kiernan, 1995; Cherlin, Chase-Lansdale, & McRae, 1998). Two explanations have been provided for this finding: Firstly, parental divorce during adolescence may be particularly disturbing developmentally as adolescence is a time of major transformations, such as the renegotiation of autonomy and connectedness with the family and the development of intimate relationships with others. The second explanation is that due to the proximity of the event of parental divorce to young adulthood, there is a greater likelihood of continuity between adverse reactions to the divorce and maladjustment in early adulthood (Chase-Lansdale, Cherlin, & Kiernan, 1995).

Research findings have repeatedly demonstrated that adolescents in divorced families receive less adult supervision, monitoring, and control than those in intact families (Hetherington, 2006). In many cases this may lead to behaviours conducive to poor academic performance, perhaps accounting for the decline in academic achievement in adolescent children of divorced parents (Jeynes, 2002). However research has also shown that reasonable amounts of responsibility assumed by adolescents after parental divorce can contribute to resilience and social competence (Hetherington, Bridges, & Insabella, 1998). For some adolescents in divorced single-parent families, taking on additional roles and responsibilities may be perceived by the adolescent as an opportunity to demonstrate independence and competence, rather than as a loss of parental support (Boyce Rodgers & Rose, 2002).

Adjustment problems associated with divorce have been well documented for childhood, adolescence, and adulthood (Amato, 2006; Walper & Beckh, 2006; Hetherington, 2006) yet numerous studies conducted with college students from divorced parents have failed to find such adjustment problems (e.g., Weiner, Harlow,

Adams, & Grebstein, 1995; Nelson, Hughes, Handal, Katz, & Searight, 1993). The resilience of college students from divorced parents was specifically noted by Laumann-Billings and Emery (2000) who also failed to find more symptoms of maladjustment among students from divorced students than other college students. They did find, however, that college students from divorced families reported more psychological distress than their peers from intact families. This finding was interpreted as evidence that even resilient college students manifest effects of parental divorce; although resilient to explicit adjustment problems following parental divorce they may still be vulnerable to psychological distress. Further research in the area has suggested that students from divorced parents come to college better equipped than their peers from intact parental homes with characteristics that help them cope with college stressors. Characteristics such as freedom from peer enmeshment and high social responsibility; both of which serve as assets for adjustment to college life and are more evident in young adult children with divorced parents (McIntyre, Heron, McIntyre, Burton, & Engler, 2003), serve to mask any adjustment problems or distress associated with parental divorce. This renders research findings with college students inconsistent.

Research findings are more consistent regarding adult adjustment following parental divorce in a non-student population; the association between parental divorce and psychological maladjustment is present even in midlife (Maier & Lachman, 2000). Amato and Keith (1991) published a meta-analysis of 92 studies that examined the consequences of parental divorce for later well-being in adulthood by comparing adults who experienced parental divorce as children with adults whose parents were continuously married. Their analysis, based on data from 81,000 people in 37 studies found that parental divorce had negative consequences for adult psychological well-being (depression, life satisfaction), family well-being (divorce, low marital quality), socioeconomic well-being (low educational attainment and income), and physical health. Similarly findings from a longitudinal study (Cherlin, Chase-Lansdale, and McRae, 1998) showed that the difference in emotional problems between adult children of divorced parents and adult children of non-divorced parents widened with age, leading the authors to conclude that the life courses of children of divorced parents continues to diverge in adulthood from the life courses of those whose parents do not

divorce. Both psychologists and sociologists have relied upon the quality of the bond between child and its parents to explain the impact of divorce on children and adolescents, working under the assumption that parent child bonds become less important after offspring reach adulthood (Amato & Sobolewski, 2001). However many studies show that children's emotional ties to their parents continue to be associated with psychological adjustment and subjective well-being throughout the adult years (Amato, 1994), perhaps explaining why psychological difficulties associated with parental divorce do not go away; relatively little support from parents may maintain or amplify distress in early adulthood (Amato & Sobolewski, 2001).

3.3.2 The interaction between sex, parental divorce, and adjustment

Research evidence of sex differences in the various impacts of parental divorce is rather inconsistent. This may be because sex appears to change its impact as an interacting factor between parental divorce and adjustment over the life course (Storksen, Roysamb, Holmen, & Tambs, 2006). Marked sex differences are consistently found in the responses of pre-adolescent children to divorce; with a predominance of negative effects among boys (Amato, 2001; Simons, Lin, Gordon, Conger, & Lorenz, 1999; Hetherington, 1993). However Hetherington (1993) reported that this sex difference was more rarely found among early adolescents. Indeed just as sex specific vulnerability to interparental conflict reversed during adolescence; with females' vulnerability overtaking males' at this developmental stage, female adolescents overtake male adolescents in maladjustment associated with parental divorce.

Adolescent girls report more enduring symptoms of anxiety and depression in association with parental divorce than adolescent boys (Storksen, Roysamb, Holmen, & Tambs, 2006). Such a sex difference was not present at earlier developmental stages only appearing in adolescence, leading researchers to surmise that the effects of parental divorce are exacerbating a previously documented sex difference in depression in adolescence; adolescent females experience more of or react more to negative life events and stress than adolescent boys, with a propensity for depression (Storksen, Roysamb, Moum, & Tambs, 2005). The reversal of sex differences in adolescence is

consistent with Wallerstein's (1991) observations regarding the presence of 'sleepers effects' in young women from divorced families (Zill, Morrison, & Coiro, 1993).

Also consistent with the existence of sleeper effects in women are findings suggesting that marital status and quality of intimate relationship mediate some of the long term negative effects of parental divorce among adult females. Findings suggest that women with divorced parents may be disadvantaged in their intimate relationship competence; negative effects of parental divorce on social relationships are evident only in adult females, not males (Huure, Junkkari, & Aro, 2006; Aro & Palosaari, 1992). This, combined with the documented greater tendency to divorce among the adult children of both sexes from divorced parents (Amato, 2006) increases the likelihood of poor marital quality and low social support, both of which are linked to poor well-being. It has been suggested that parental divorce establishes a 'vulnerable set' (comparable to Wallerstein's sleeper effects) in female offspring, which may be invoked in the event of a divorce or breakdown of an intimate relationship. The depression resulting from this vulnerable set being triggered is thought to be long lasting (Rodgers, 1994).

In contrast to all of the findings detailed above, and perhaps serving to demonstrate the large variance in offspring reaction to parental divorce, even within each sex, some research suggests that females are often enhanced by dealing with the challenges of parental divorce; emerging as exceptionally able and well adjusted (Hetherington, 2003; Hetherington, 2006; East & Khoo, 2005). Such enhancement and marked personal growth occurs less often for males in response to divorce (Hetherington, 2003).

4 Effects of family structure and process on sibling relations

Having established the effects of family processes and structure upon individual adjustment, the aim of this chapter is to review the literature concerned with the effects of family processes and structure upon sibling relationships.

The interest in studying sibling relationships within the larger context of the family emerged from two theoretical perspectives; attachment theory, and family systems theory (Hetherington, 1994). Attachment theory suggests that the child's internal working model of relationships is based on early interactions with caregivers. This model, in turn, shapes the child's expectations and behaviours in subsequent relationships, such as the sibling relationship (Teti & Abbard, 1989).

Family systems theory was suggested as a guide for research by Minuchin in 1988 (Brody, 1998). From a systems perspective the family is seen as a "complex, integrated whole" (Minuchin, 1988, p.8) within which individual family members are interdependent, exerting a reciprocal influence on each other (Cox & Paley, 1997). The family comprises two components; the individual members and the relationships between the members. However the family is considered to be more than just a sum of its components, it is itself a dynamic entity. An individual family member therefore belongs to the family as a whole, whilst simultaneously participating in several subsystems (such as the sibling and parent-child subsystems) each of which can be affected by events occurring in other subsystems. For example a traditional family unit of four contains four members (2 parents, 2 children), six 'dyads' or two person relationships (1 parental dyad, 2 mother child dyads, 2 father child dyads, and 1 sibling dyad), and four 'triads' or three person relationships (2 mother, father and child triads, 1 father and children triad, and 1 mother and children triad), as well as the family system as a whole.

Considering the sibling relationship as part of the family system thus requires it to be studied as an interrelated component of that system along with other family relationships. Research has since considered the quality of both the marital relationship

and the children's relationships with each parent to be important influences upon sibling relations (i.e. Brody, Stoneman, McCoy, & Forehand, 1992; Brody, Stoneman, & McCoy, 1994).

4.1 Parent-child relationships and sibling relations

Research has shown the security of young children's attachment to their parents to be correlated with individual differences in later sibling relationships. Essentially children who were secure in their parental attachments had more positive sibling relationships than those who were insecurely attached. Three studies systematically examined the role of children's attachment to their parents in shaping their subsequent sibling relationships: Bosso (1986); Teti & Ablard (1989); and Volling & Belsky (1992) (Teti, 2002). Bosso (1986) found securely attached 18 to 32 month olds were less negative and more positive toward their younger infant siblings. These relations were found both in the home and laboratory, as well as both in and out of the mother's presence. Teti and Ablard (1989) also assessed preschool aged children's attachment to mothers, identifying four sibling security status groups: secure infants with more secure older siblings; secure infants with less secure older siblings; insecure infants with more secure older siblings; and insecure infants with less secure older siblings. Of the four groups the highest levels of antagonism between siblings were found in insecure infants with less secure older siblings, with the lowest levels of antagonism being found in the secure infants with more secure older siblings. Volling and Belsky (1992) conducted a replication and extension of Teti and Ablard's work, assessing both infant-mother and infant-father attachment relationships and hypothesising that sibling interaction would be 'more prosocial and less conflictual if firstborn children had a secure infant-parent attachment at the end of their first year' (Volling & Belsky, 1992, p1210). Their findings suggested that aspects of the mother-child relationship predicted sibling conflict while aspects of the father-child relationship predicted prosocial behaviour between siblings. In the case of the father's contribution to the prediction of sibling interaction it was not attachment security that predicted prosocial behaviour but whether

the fathers were more facilitative and affectionate in their interactions than intrusive or uninvolved.

As is evident from the studies described above, the majority of the research investigating the effects of parent-child relationships upon sibling interactions studied mother-child relations only (Volling, 2003). The general consensus of this research was that warm and affectionate mother-child interactions related to affectionate and prosocial sibling interactions. These findings accord with both attachment theory; whereby children develop internal representations of relationships from interaction with their mother and subsequently apply those representations to develop and conduct a sibling relationship; and social learning theory; whereby behaviour patterns enacted during mother-child interactions are generalised to the sibling subsystem. Far less research has studied fathers' roles in sibling relationships and interactions (Volling, 2003). The studies that have been conducted including fathers have found that paternal positivity is related to positivity in the sibling relationship (Volling & Belsky, 1992; Brody, Stoneman & McCoy, 1992). In addition the father-child relationship has a particular salience; providing unique experiences and effects distinct from those of the mother child relationship, which may be important for the development of positive sibling behaviour (Brody et al., 1992; Volling, 2003). It has been suggested that this greater salience of paternal behaviours and interactions occurs when fathers are less involved in parenting, and everyday care-giving, than mothers (McHale, Kim, & Whiteman, 2006).

In contrast to the above findings there do appear to be certain circumstances under which the sibling relationships formed do not fit this pattern. In keeping with the 'compensatory model' of family relationships positive, supportive sibling relationships can develop in circumstances where the parent-child relationships are uninvolved; this is particularly the case in families that are suffering from extreme stress or social problems (Dunn, 2002). Furthermore there is consistent evidence that hostile sibling relationships are found in families with parental differential behaviour; whereby one child is treated preferentially over their siblings (for reviews see Volling, 2003; Teti, 2002; Dunn, 2002).

4.1.1 Differential parent-child relationships

A differential parental relationship is when one child receives more attention and affection, combined with less control and discipline, from a parent, compared to their sibling(s). Differential relationships have been consistently associated with greater levels of conflict and hostility within the sibling relationship (e.g. Brody, Stoneman & McCoy, 1992; Brody, Stoneman, McCoy & Forehand, 1992; Volling & Belsky, 1992; McHale, Crouter, McGuire & Updegraff, 1995; Richmond, Stocker & Rienks, 2005) and to greater adjustment difficulties for the less favoured child (McGuire, Dunn & Plomin, 1995). Research examining the family conditions of parental differential treatment suggests that it is more common in stressful family circumstances; such as during marital distress or dissolution. In turn stressful family circumstances may exacerbate the negative implications of parental differential treatment (McHale, Kim, & Whiteman, 2006).

Grounded in early research on sibling rivalry and later research on social comparison theory the majority of early research investigating the effects of parental differential treatment was conducted in the 1980's and focused on the effects of the mothers treating siblings differently (Volling & Elins, 1998). Fathers were included in studies of non-shared environmental influences in the 1990's and it was discovered by Brody, Stoneman & McCoy (1992) that differential paternal treatment was not only related to the quality of sibling relationships but actually explained unique variance in sibling relationship quality once the differential maternal treatment had been controlled. Brody et al.'s finding that paternal differential treatment (rather than maternal) is more strongly related to sibling relationship outcomes, echoes findings on the effects of parent-child relationships upon the sibling dyad. Again this may be due to the particular salience that paternal interactions have due to less father involvement, but the nature of the paternal role may also contribute; fathers' roles are traditionally centred around leisure and play and may therefore be more relevant to sibling relationship dynamics than the mother's care-giving role (McHale, Kim, & Whiteman, 2006). This area of research was further expanded when McHale, Crouter and Updegraff (1995) considered

family patterns of differential treatment, taking into account the behaviour of both parents simultaneously. Families were identified as falling into one of three groups, according to their patterns of differential treatment: 1) Congruent patterns; whereby both parents displayed a similar pattern of treatment, 2) complimentary patterns; whereby one parent directed more of a behaviour to one sibling and the other parent directed more of the same behaviour to the other sibling, and 3) incongruent patterns; whereby one parent directed more of a behaviour to one sibling while the other parent treated the siblings equally. McHale et al. found the majority of families demonstrated congruent patterns of differential treatment, a proportion of families demonstrated incongruent patterns of differential treatment, but the complimentary pattern was very rare. Volling (1997) replicated McHale et al.'s study with a sample of siblings between 3 ½ and 6 years old, finding results consistent with McHale et al.'s findings with older children (school age) and adolescents. However in the Volling study any differential discipline meant more discipline being directed to the older child, not the younger sibling as was the case in the McHale et al. study. These results suggest a developmental explanation; parents, sensitive to the developmental differences between their children, may be appropriately disciplining and controlling whichever child most warranted such attention; the younger school age child in the McHale et al. study and the older preschool age child in the Volling study (Brody, 1998; Volling & Elins, 1998).

With such a large body of research supporting the importance of parental differential behaviour in accounting for variation in sibling relationships researchers even went so far as to predict that "direct behaviour may become less important than differential behaviour in predicting sibling relationship quality" (Brody, Stoneman & McCoy, 1992, p91) meaning that parent-child relationships would be shown to have a lot less impact upon the sibling relationship than differential treatment of children by their parents. However more recent research has actually found that the children's interpretations of differential behaviour moderate the impact of such treatment. McHale, Crouter, McGuire & Updegraff, (1995) found that younger children were more sensitive and reactive to differential parenting, and concluded that children's understanding of differential treatment may change across developmental periods, since adolescents are more likely to justify the unequal treatment as being due to the children's own

developmental differences. The impact of the children's interpretations of differential treatment was first documented by Kowal and Kramer (1997). Kowal and Kramer's findings led the authors to conclude that parental differential treatment is only related to poor sibling relationships if the children themselves interpreted the differences as unfair. Children who perceived their parents' differential behaviour to be justified reported their sibling relationship as being positive. These findings suggest that parental differential treatment does not always have negative consequences for the sibling relationship; it may be the children's construction of the meaning of parental behaviours that influence the sibling relationship, rather than the behaviours themselves.

4.2 Parent's marital relationship and sibling relations

Given the interdependence of family relationships, conflict in the marital dyad is likely to extend to other parts of the family system, such as the sibling relationship. Research conducted has clarified the relationship between the parents' marital relationship and sibling relationship quality (Brody, 1998), with discordant marital relationships being consistently linked to less positive sibling relationships (Brody, Stoneman, McCoy, & Forehand, 1992). Marital conflict and unhappiness are both associated with less positivity and more negativity in sibling relationships (Brody Stoneman, & McCoy, 1994; Brody, Stoneman, McCoy, & Forehand, 1992; Hetherington, 1988). Although numerous investigations have indicated that witnessing anger such as marital conflict causes negative emotional reactions in children, some older siblings respond instead by increasing care-giving and prosocial behaviour towards younger siblings (Hetherington, 1989; Brody, 1998). This behaviour may well buffer the younger sibling from the distress associated with marital conflict. However the extent to which this behaviour serves as a buffer is under researched and therefore somewhat unknown.

The significant link between parental marital relations and child behaviour has been consistently reported in the literature examining marital relations and sibling interaction (Erel, Margolin, & John, 1998), but the method by which the marital relationship affects children's behaviour (such as sibling interaction) is disputed. Some researchers have

suggested that the marital relationship affects children's behaviour directly via social learning processes (e.g. Emery, Fincham, & Cummings, 1992), whilst others maintain that a simple social learning account cannot explain the connection and that the relationship is indirect, impacted by the parent-child relationship (e.g. Stocker & Youngblade, 1999; Brody, Stoneman, & McCoy, 1994; Fauber & Long, 1991). These studies show that marital distress has negative implications for parenting and that the reduction in quality of the parent-child relationship gives rise to conflict and hostility in the sibling relationship. Whilst there are many pieces of research supporting both the direct and indirect model very few studies were conducted using sibling interaction as the specific index of child behaviour. However three studies that did specifically examine sibling interaction found support for the indirect (mediational) model (Brody, Stoneman & McCoy, 1994; Erel, Margolin, & John, 1998; Stocker, Ahmed, & Stall, 1997) suggesting that the marital relationship affects some aspect of the parent-child relationship which, in turn, affects the sibling relationship. Indeed Stocker and Youngblade (1999) examined the role of parental hostility as a mediator between marital conflict and sibling relationships and found that mothers' hostility towards their children linked marital conflict to sibling warmth and hostility, whereas fathers' hostility to their children mediated the associations between marital conflict and sibling rivalry and hostility. This support for an indirect route between the marital relationship and sibling relationship quality provides an appropriate model for the family system itself, a model taking into account all three family subsystems (Marital, parental, and sibling). Between the aforementioned three studies both self-reported sibling interaction (Stocker, Ahmed, & Stall, 1997; Brody et al., 1994) and observed sibling interaction (Erel et al., 1998) was examined in three different age ranges; early childhood, middle childhood, and early adolescence. Indeed Erel et al. (1998) suggested that the different findings from the studies supporting direct links and the studies supporting indirect links may be due to methodological factors.

4.2.1 Sibling relationships following parental divorce

Social learning theory (Bandura, 1977), attachment theory (Bowlby, 1973), and the stress buffering hypothesis (Cohen & Wills, 1985) all provide theoretical accounts of

relationships between parental divorce and the quality of the sibling relationship (Milevsky, 2004; Seginer, 1998; Riggio, 2001). However there are two predominant hypotheses in this area of research; contamination and compensation, and therefore two separate groups of research findings and their underlying theoretical foundations are relevant to the study of sibling relationships following parental divorce. The contamination hypothesis postulates that parental conflict and divorce results in sibling hostility and conflict, and the compensation hypothesis postulates that the sibling relationship compensates for deficits experienced in other interpersonal relationships. The contamination hypothesis is supported by social learning theory; a child growing up in a disharmonious home lacks a positive model for interpersonal and social skills and would thus develop difficulties in maintaining healthy relationships. These social problems would be manifested in all of the child's social relationships; including the sibling relationship (Milevsky, 2004; Riggio, 2001). Attachment theory also provides a theoretical foundation for the contamination hypothesis; parental conflict and divorce adversely affects the parent-child relationships, which are then reconstructed by the child in other close relationships (Seginer, 1998). The compensation hypothesis is supported by the stress buffering hypothesis perspective as it suggests that it would be adaptive for an individual to seek out additional sources of support to assist in the coping process. Therefore, a child may develop a close sibling bond in the event of parental divorce to buffer against the stressful event (Milevsky, 2004; Riggio, 2001; East & Khoo, 2005). This compensatory sibling bond thus serves to moderate (buffer) the negative effects of parental divorce. The compensatory hypothesis is further supported by findings from research into other life stressors; whereby children who had affectionate relationships with their siblings were less likely to experience an increase in internalizing behaviour following stressful life events than children without affectionate sibling relationships (Gass, Jenkins, & Dunn, 2007).

Hetherington (1988) studied sibling relationships in a total of 180 families prior to, and six years following, parental divorce. Relationships were measured using a sibling relations inventory including scales such as involvement, warmth/empathy, rivalry, conflict/aggression, avoidance, coercive power/control, and positive power/control. Main findings were that siblings in stepfamilies exhibited more problematic

relationships than siblings in either non-divorced or divorced families, and that any sibling dyad involving a boy was both observed and reported as being more troubled than those involving only girls. Male siblings in divorced families were more aggressive and coercive and displayed more rivalry than any other group of children. Hetherington offered two hypotheses regarding siblings' experiences of their parents' marital transitions. The first was similar to the contamination hypothesis as Hetherington suggested that siblings would become increasingly hostile and rivalry would increase as they competed for the reduced, and therefore limited, parental attention immediately following divorce and/or remarriage. Hetherington's second hypothesis was extremely similar to the compensation hypothesis; siblings of recently divorced parents would turn to each other for support, viewing adults and their relationships as unstable.

A cluster analysis identified four typologies of sibling relationships which Hetherington (1988) labelled as enmeshed, companionate-caring, ambivalent, and hostile alienated. The enmeshed siblings constituted less than 10% of the sample and were characterised by very high levels of warmth, involvement and communication, and very low levels of rivalry and aggression. These siblings were intensely interdependent and although they were nurturing and empathetic towards each other, they showed very little concern for the feelings of others outside of the sibling dyad. Enmeshed siblings were most likely to be girls and found in either divorced or step families where there is little contact with an affectionate involved adult. Hetherington surmised that enmeshment occurs under stressful life conditions without available adult support. The second typology, labelled companionate-caring, was characterised by siblings with moderate involvement, high warmth and empathy and moderately low aggression and rivalry. These companionate-caring siblings also experienced positive peer relationships, high academic achievement and positive self concepts. This cluster included 33% of sibling dyads and was most often found in non-divorced families with authoritative parents. A small number of siblings in divorced families were also found in this group, though they were more often female siblings than male. Ambivalent siblings were characterised by high levels of rivalry and aggression but also moderately high warmth and involvement. These siblings were competitive and coercive whilst being loyal and protective of each other.

This relationship was a very common sibling interaction pattern, occurring in 35% of Hetherington's sample. An ambivalent sibling relationship was predominately found in sons in divorced, non-remarried families. It was also found in families where one parent was authoritarian and the other was disengaged or permissive, and was equally likely to occur in boys or girls in stepfamilies and non-divorced families. Hetherington's fourth cluster or sibling relationship typology is the hostile alienated sibling relationship, characterised by low levels of involvement, communication, warmth, and empathy and high levels of aggression and coercion. These siblings typically avoided each others company whenever possible and were cold and aggressive when they did interact. This type of sibling relationship was most often found in boys in divorced non-remarried families, particularly those with a disengaged mother, and in girls in remarried families. Three of Hetherington's four typologies were predominately found in divorced families; enmeshed, ambivalent, and hostile alienated siblings. The hostile alienated sibling typology accords with Hetherington's first hypothesis; that siblings would become increasingly hostile and rivalrous competing for parental attention. The siblings clustered in the enmeshed typology support Hetherington's second hypothesis; that siblings would turn to each other for support. The ambivalent sibling typology commonly found in divorced families somewhat appropriately falls somewhere between the two hypotheses; having high levels of rivalry and aggression as per the first hypothesis, but also moderately high levels of warmth and involvement as per the second hypothesis.

A more recent study conducted by Sheehan, Darlington, Noller, and Feeney (2004) compared sibling relationships in non-divorced and separating or divorced families, conceptualised by McGuire, McHale, & Updegraff's (1996) four group typology of the sibling relationship. As McGuire et al.'s (1996) typologies were based on young children from intact families Sheehan et al. (2004) aimed to confirm this work in an adolescent sample and extend the work by confirming an over-representation of adolescent siblings from separated or divorced families in the affect intense typology, characterised by simultaneously high levels of warmth and hostility. The theory behind this hypothesis was that compensation, whereby siblings assume strong caretaking roles to compensate for unsupportive parent-child relationships, and contamination, whereby

the quality of the sibling relationship is similar to (contaminated by) the parent-child relationships in sibling relationships, need not be mutually exclusive social processes. The authors proposed that parental separation or divorce is an event in adolescents' lives that can lead to a sibling relationship which is both supportive; compensating for parental inadequacies, and highly conflicted; mirroring the hostility evidenced in the parent-child and marital relationships. Indeed Sheehan et al.'s (2004) hypotheses were supported, leading the authors to support McGuire et al.'s (1996) suggestion that sibling hostility and warmth coexist as separate dimensions of the sibling relationship rather than opposite ends of the same continuum, meaning that it is possible for a sibling relationship be both hostile and warm. Analysis of the affect-intense sibling relationships revealed important positive aspects of the relationship to be siblings' nurturance of each other, and mutuality when resolving conflict. Indeed the highest degree of nurturance of and by their siblings was reported by siblings in an affect-intense relationship, equal to that reported by siblings in McGuire et al.'s (1996) harmonious sibling relationship type. Negative aspects of affect-intense relationships were characterised by behaviours such as attacking behaviour during disagreements, and high levels of dominance, equal to that reported by siblings in McGuire et al.'s (1996) hostile relationship typology. This research helps to explain the inconsistencies in findings linking marital relationship factors to positivity and negativity in the sibling relationship; where some findings suggest divorce heightens hostility in the sibling relationship and others find that divorce leads to greater sibling warmth and nurturance. Both Hetherington's (1988) ambivalent sibling typology and Sheehan et al.'s findings with regards to the affect-intense sibling relationship suggest that the contamination and compensation hypotheses are not mutually exclusive in sibling relationships following parental divorce; sibling relationships can be positive and negative, simultaneously warm and hostile. Therefore sibling relationship quality should instead be defined in terms of a balance between the pro-social and anti-social (hostile) aspects of the relationship.

5 Effects of sibling relationships upon individual adjustment

The previous two chapters have highlighted the effects of family structure and process upon adjustment and sibling relationships respectively. This chapter reviews the literature concerned with the effects of sibling relationships on individual adjustment. Initially, both positive and negative direct sibling influences on adjustment are reviewed. Then, focussing on the positive influences of siblings, the literature regarding the effects of sibling relations upon individuals' social competence and psychosocial adjustment are reviewed. This includes the positive effects of sibling conflict and the role of sibling support; generally and specifically following parental divorce. This is followed by investigations into the sex differences in sibling interactions and the developmental course of sibling relationships.

5.1 Direct effects of siblings on psychosocial adjustment

A growing body of research demonstrates the importance of sibling relationships for individual adjustment; research findings suggest that experiences with siblings may have direct and significant effects on adjustment (Kim, McHale, Crouter, & Osgood, 2007; Dunn, 2005). Research has shown that these 'sibling effects' can be both good and bad, resulting in either successful adjustment or maladjustment. Researchers have therefore begun investigating exactly which aspects of the sibling relationship affect adjustment, in either a positive or negative manner, in order to be able to include the sibling relationship in the promotion of successful adjustment. When the quality of the parent-child relationship is controlled for, there is evidence for associations between the quality of sibling relationships and children's externalizing and antisocial behaviour (i.e. Stocker, Burwell, & Briggs, 2002; Garcia, Winslow, Shaw, & Yaggi, 2000; Kim, Hetherington, & Reiss, 1999; Bank, Patterson, & Reid, 1996). There is also evidence, although this is less consistent across studies, for independent contributions of sibling relationship quality to internalizing behaviour; such as depressed mood, anxiety, poor self-esteem, and loneliness (Dunn, 2005; Stocker, Burwell, & Briggs, 2002). Research on sibling effects on individual adjustment has predominately focused on adjustment problems, documenting sibling similarity in antisocial or risky behaviours, and

identifying sibling relationship characteristics that may explain such behaviours. The power of sibling effects on adjustment is apparent in the wide range of affected developmental outcomes used to define maladjustment (Snyder, Bank, & Burraston, 2005). The most researched developmental outcomes are behaviours in the externalizing realm; antisocial behaviours such as aggression, delinquency, and deviance.

Researchers have described two theories of social processes by which siblings may contribute to the risk of antisocial behaviour; 'siblings as key pathogens', and 'partners in crime' (Snyder, Bank, & Burraston, 2005; Slomkowski, Rende, Conger, Simons, & Conger, 2001). The first theory, labelled 'siblings as key pathogens' (Patterson, 1984, cited in Slomkowski et al., 2001) suggests that siblings provide training models for antisocial tendencies. This theory of sibling training in coercion involves two social processes: observational learning of negatively reinforced interactions with parents (siblings are exposed to, and therefore imitate, siblings' coercive interactions with parents); and direct practice in coercive behaviour during sibling conflict. Different processes have been emphasized in the 'partners in crime theory' (Rowe & Gulley, 1992, cited in Slomkowski et al., 2001) which introduces the notion that sibling commonalities for antisocial behaviour may be attributed to positive dimensions of the sibling relationship, such as warmth and support. Essentially siblings who have a close, positive relationship collude and co-participate in antisocial behaviour or deviant activities during adolescence. Although it may appear that the two theories described above propose completely different social processes between siblings that may lead to delinquency, it is suggested that they are compatible and actually operate in a complimentary pattern to increase risk. Coercive sibling interaction provides a basic training in aggression whereby sibling pairs develop antisocial tendencies; siblings who become similarly aggressive then co-participate in and mutually reinforce a wider variety of antisocial activities that facilitate increasingly diverse and serious forms of antisocial behaviour (Snyder, Bank, & Burraston, 2005). Contrary to researchers' expectations, in the acquisition and maintenance of psychosocial adjustment, an older sibling is not more likely to affect a younger sibling than the other way around; it seems that younger siblings may observe their older sibling's psychosocial adjustment and see

them as an emulative example, but older siblings also do the same (Branje, Van Lieshout, Van Aken, & Haselager, 2004).

Sibling relationships have been shown to be associated with the development of externalizing problems, indexed by antisocial behaviour. However as sibling relationships do not occur in isolation, but rather as one component of interrelated dyadic subsystems, researchers have examined the interactions between sibling relationships, their influence or effects on individual adjustment, and family functioning. Three models have been tested: the cross system contagion model; the additive model; and the interactive model (Criss & Shaw, 2005). According to the cross system contagion model, hostility within family subsystems spreads to the sibling dyad and disrupts the quality of the sibling relationship, increasing the risk for externalizing behaviour. Support for this model has been found in the sibling relationships literature; for example Erel, Margolin, & John (1998) found that high levels of marital conflict predicted high levels of sibling negativity, and Brody, Stoneman, McCoy, & Forehand (1992) reported that low harmony, low cohesion, and high conflict in the family were significantly related to levels of sibling conflict at a later date. Collectively these findings point to a link between marital, parent-child and sibling relationships.

Additive models investigate whether dimensions of sibling relationships predict antisocial behaviour after accounting for (and therefore in addition to) parenting effects; thereby addressing whether sibling relationships are merely markers of other family processes (i.e. hostile marital relations, rejecting parenting) or themselves serve as unique contexts for socialization. Studies testing additive models have found evidence for sibling relationships as predictors of antisocial behaviour after accounting for family functioning: Bank, Burraston, & Snyder (2004) found ineffective parenting and sibling conflict were each unique and significant predictors of child antisocial behaviour and of affiliation with antisocial peers. Similarly MacKinnon-Lewis, Starnes, Volling, & Johnson (1997) found sibling aggression to be a significant predictor of child aggression after controlling for maternal rejection. These findings suggest that sibling relationships explain independent variance in relation to antisocial behaviour after controlling for family functioning.

The focus of interactive models is whether children experiencing multiple negative family relationships would be at increased risk for adjustment problems; being involved in other negative family relationships may exacerbate the link between sibling relationship quality and antisocial behaviour. Research has suggested that experiencing adverse relations in multiple contexts, rather than in a single context, may elevate the risk for antisocial behaviour. For example Garcia, Shaw, Winslow, & Yaggi (2000) reported that children who experienced high levels of both rejecting parenting and sibling conflict shared higher levels of externalizing problems compared to children with elevated levels of only one of those factors; either rejecting parenting or sibling conflict.

Criss and Shaw (2005) conducted a study aimed to test the validity of all three models pertaining to sibling relationships and adjustment problems. Two dimensions of sibling relationship quality were assessed; intimacy (warmth and closeness), and conflict (antagonism and hostility). Two domains of adjustment were measured; antisocial behaviour, and affiliation with antisocial peers. The findings were consistent with a cross systems contagion perspective; negativity in the mother child subsystem was positively associated with sibling conflict. Support was also provided for the additive model; sibling intimacy and conflict were both significantly related to antisocial behaviour after accounting for variance associated with other family relationships. Finally, no support was found for the interactive model, as the association between the sibling relationship quality and antisocial behaviour was not moderated by negativity in other family relationships. Criss and Shaw's findings provide further support for the importance of siblings as socializing agents, the unique effect of siblings on individual adjustment is not affected by other relationships within the family context, meaning that their influence on adjustment is distinct from the influence of other family relationships.

However, siblings do not exert only a negative influence on adjustment; sibling relationships also have an important positive influence upon an individual's adjustment. Much research has focused mainly on the negative characteristics of the sibling relationship; documenting the ways in which sibling modelling and negative

reinforcement exacerbates antisocial behaviour, particularly in at risk children. However, developmental research suggests that, at least in normative samples, sibling relationships provide an important context for positive socialization as well (Stormshak, Bellanti, Bierman, & Conduct Problems Prevention Research Group 1996). Both positive and negative aspects of sibling interactions are related to positive individual adjustment. For example sibling conflict, which is a significant predictor of negative outcomes in samples of aggressive children, is often correlated with positive interactions and outcomes in normative samples. It is thought that concurrent sibling warmth moderates the impact of moderate, rather than destructive, sibling conflict; meaning that a sibling relationship characterized by moderate levels of both conflict and warmth promotes the development of emotional regulation and allows both siblings to practice negotiation skills, leading to better social adjustment. Similarly, Pike, Coldwell, and Dunn (2005) found variations in positive sibling behaviour were associated with child adjustment whereas negative sibling behaviour (within the normal range) was not. The authors suggested that positive aspects of the sibling relationship provide a probable context for prosocial development, a theory supported by other recent research.

In the area of prosocial behaviour, older siblings' prosocial behaviour during sibling interaction is predictive of helping, sharing, and co-operating in younger siblings (Garcia, Shaw, Winslow, & Yaggi, 2000). Likewise Dunn and Munn (1986) found that children whose older siblings showed high levels of prosocial behaviour during sibling interaction demonstrated more conciliating behaviour and co-operating six months later than children whose older siblings did not behave as prosocially. This is explained by the finding that older siblings enhance younger siblings development of empathy, an attribute considered necessary for prosocial behaviour (Tucker, Updegraff, McHale, & Crouter, 1999). Differences in sibling relationship quality are associated with differences in the development of various aspects of social understanding and therefore social competence (Stormshak, Bellanti, Bierman, & Conduct Problems Prevention Research Group, 1996), with friendly sibling relationships positively correlated with the maturity of moral orientation (Dunn, Brown, & Maguire, 1995). As well as prosocial behaviour and behavioural competence, the quality of sibling relationships is important

for individual well-being. The level of warmth in a sibling relationship is positively associated with positive self worth (Stocker, 1994), high self esteem and fewer feelings of loneliness (Sherman, Lansford, & Volling, 2006). These findings all indicate that intimacy and warmth in the sibling relationship is linked to positive adjustment, in both the individual and social realms.

It appears that the sibling relationship is particularly important for personal adjustment in females, more so than for males (Davis, 2000; Sutton, 1996). Oliva and Arranz (2005) found sibling relationships had a significant correlation with self-esteem and life satisfaction for female participants, but male participants' sibling relationships, although found to be just as positive as the females' relationships, were not related to personal adjustment variables. Similarly Kim et al. (2007) found that low levels of sibling intimacy were only related to depressive symptoms for females. Such findings are in accordance with a growing body of research suggesting a greater sensitivity in females to interpersonal relationships, especially those within the family (Colarossi & Eccles, 2000; Geuzaine, Debry, & Liesens, 2000). The majority of studies investigating sibling effects on maladjustment, indexed by antisocial behaviour, have focused on brothers, perhaps because of the higher rates of antisocial behaviour found in males. The few sibling studies that have focused on antisocial behaviour in both males and females have reported substantial similarity in both sisters' and brothers' antisocial behaviour, only mixed sex pairs show negligible sibling effects upon antisocial behaviour (Slomkowski, Rende, Conger, Simons, & Conger, 2001; Rowe & Gulley, 1992). This means that the siblings' effects on antisocial behaviour were only significant if both siblings were of the same sex. Research findings do suggest that sibling effects on antisocial tendencies may differ according to sex, each sex having a unique interactive style that promotes delinquent behaviour in sibling pairs. Rowe and Gulley (1992) found that for male sibling dyads, as well as hostility and coercion, sibling warmth provided a conditional interactive context in which antisocial tendencies were promoted, leading to similarity in siblings' antisocial behaviour. This is consistent with studies suggesting siblings operate firstly as 'key pathogens' and then join forces as 'partners in crime' to commit delinquent acts. However, for females the process appears to differ; hostility and coercion remain conditional, but instead of high levels of sibling warmth being

conditional, low levels of sibling warmth condition the similarity in sisters' antisocial behaviour (Slomkowski, Rende, Conger, Simons, & Conger, 2001). Sisters' similarity is therefore consistent only with the 'siblings as key pathogens' model whereas brothers' similarity may be attributed to relationship dynamics described by both the siblings as key pathogens' model and the 'partners in crime' theory. Thus the minimal research conducted on female sibling effects on maladjustment suggests potentially important differences in sibling influence according to sex.

Research findings in the area of sibling effects on individual adjustment are generally consistent with tenets of a risk/protective framework, in suggesting that sibling relationship experiences can serve as both protective and risk factors for individual adjustment (Kim, McHale, Crouter, & Osgood, 2007). For example family experiences can expose an individual to positive and negative role models, supportive and conflictual interactions, and to reinforcement of prosocial and antisocial behaviours. In the case of sibling relationships, siblings can promote positive adjustment when they model and reinforce positive social behaviours and serve as sources of social support, but conflict and negativity can lead to adjustment problems through observational learning and reinforcement of antisocial or deviant behaviour. For the purposes of this programme of research, the positive (protective) effects of sibling relationships will be focussed on, rather than the negative, in order to further understand their possible role as distress moderators. Therefore the following section will review the literature concerned with the positive roles of sibling relationships in psychosocial development and adjustment.

5.2 The role of sibling relationships in the development of social competence

5.2.1 Siblings' contributions to the development of sociocognitive development

The sibling relationship is considered influential in the development of children's social and emotional understanding. Experiences with siblings provide a context in which

social skills may be obtained, practiced, and generalized to relationships with peers (Parke, 2004). It has been suggested that older siblings function as tutors; managing and supervising their younger siblings' behaviour during social interaction (Edwards & Whiting, 1993, as cited in Parke, 2004). In support of these intimations it has been found that children with siblings exhibit better social and interpersonal skills than children without siblings (Downey & Condon, 2004).

The number of siblings in a family has been found to be positively related to young children's reasoning and performance in theory of mind tasks (Perner, Ruffman, & Leekham, 1994). 'Theory of mind' is the ability to infer mental states in others and see them as the basis for actions. This enables the child to explain observable events, peoples' actions for example, by postulating unobservable entities such as belief and desires. Theory of mind is therefore a tool or device for understanding social behaviour. Perner et al.'s finding that children with siblings become competent at theory of mind tasks earlier than other children suggest that experiences particular to the sibling relationship expedite the development of insight into others' mental states, leading to social sophistication. The 'siblings effect' found by Perner et al. (1994) has since been replicated (Ruffman, Perner, Naito, Parkin, & Clements, 1998; Jenkins & Astington, 1996) the findings consistently showing siblings to have a positive influence on false belief understanding, and therefore performance in theory of mind tasks.

Theory of mind tasks typically use the false belief paradigm to demonstrate insight into others' mental states. Children are presented with stories, acted out with dolls and toys, in which a character holds a belief that the child knows to be false and therefore different from their own. The question is whether the child can correctly predict the character's action given the false belief; a child who has acquired the insight associated with theory of mind can appreciate that others may have beliefs which do not accurately reflect reality and that their behaviour will reflect such beliefs. Research has shown that children begin to entertain multiple hypothetical realities in social interactions in which these cognitive states are shared, not as solitary cognitive exercises (Dunn, 1998). False belief understanding is fostered through co-operative interactions such as pretend play that involves creative social role taking; a type of play that children engage in more

frequently with siblings than with anyone else (Youngblade & Dunn, 1995) suggesting that siblings' positive influence upon false belief understanding is exerted through pretend play and, more specifically, social role taking; a shared cognitive state.

As pretend play with older siblings is obviously different from pretend play with younger siblings some researchers have hypothesized that older siblings would more likely facilitate false belief understanding than younger siblings (Ruffman et al., 1998). Youngblade and Dunn (1995) found that the older the sibling the more likely that a thirty-three month old child would engage in role enactment, a sophisticated form of pretence. Role enactment at thirty-three months correlated positively and significantly with false belief understanding at forty months of age. In contrast the less sophisticated forms of pretence common to play with younger siblings were not significantly related to false belief understanding. Jenkins and Astington (1996) also found that creative social role playing correlated positively with belief understanding whereas other types of pretence did not. Research has shown that pretend play with older siblings tends to be more sophisticated and diverse, involving a complimentary pretend network and therefore role-playing in which both siblings are actively involved, rather than the less sophisticated forms of pretence evident in play with younger siblings or the object substitution common in play with mothers, who tend to be less actively involved in social pretence often acting as spectators (Farver & Wimbarti, 1995; Youngblade & Dunn, 1995). For all of the reasons described above it is plausible that older siblings would more likely facilitate belief understanding than would younger siblings. However, an alternate possibility is that both older and younger siblings facilitate theory of mind understanding. Indeed Jenkins and Astington (1996) and Ruffman et al. (1998) showed younger siblings to have some facilitative effect (though non-significant) on false belief over and above that provided by older siblings suggesting that both older and younger siblings can facilitate cognitive growth.

Debate continues as to whether there is a developmental precondition, indexed by implicit knowledge or understanding of belief, necessary before siblings can exert their influence (Ruffman, Perner, Naito, Parkin, & Clements, 1998). However what is not subject to debate is that siblings do influence and affect their siblings' understanding of

belief. The understanding of belief and false belief has an impact on a wide variety of socially relevant distinctions (between mistakes and lies, lies and jokes, deception and irony). The understanding of false belief is positively related to the use of mental state terms to negotiate interactions with others (Brown, Donelan-McCall, & Dunn, 1996), a necessary skill for conflict negotiation. A child's theory of other people's minds represents an ability to understand others' beliefs and perspective in a context. This allows an understanding of others' emotional states and the development of empathy; considered to be a prerequisite for prosocial action (Tucker, Updegraff, McHale, & Crouter, 1999), furthering sociocognitive development and, as a result, social competence. Section 5.2.2 below will further review the influence of siblings upon social competence, exploring the link between sibling and peer relationships.

5.2.2 Siblings and peer relationships

It would be reasonable to expect similarities across friendships and sibling relationships, since both are relatively intense dyadic (two person) relationships (Volling, Youngblade, & Belsky, 1997) and sibling and peer relationships are the two domains of children's social lives in which children interact with other children (Lockwood, Kitzmann, & Cohen, 2001). Milevsky (2005) found that sibling support in the young adult population compensates for low peer support on a range of well-being measures (including loneliness, depression, and self esteem) to a larger degree than for low mother/father support, suggesting a similarity between sibling and peer relationships. Indeed a number of theoretical orientations predict positive associations between sibling and friend relationships (for example social learning theory and attachment theory) although each theoretical account differs in its explanation of the processes underlying said associations. However, despite theory suggesting the existence of a link or even a number of links between sibling and friend relationships, the evidence is inconsistent at best (Cutting & Dunn, 2006). This has led to the development and prevalence of two directly competing hypotheses regarding the links between sibling and friendship experiences in children and adolescents (Updegraff & Obeidallah, 1999). The first hypothesis suggests that there is congruence between child sibling and friend relationships, and therefore emphasizes similarities or straightforward carryover effects

between the two. In contrast the second hypothesis emphasizes incongruence in children's experiences with siblings and friends. Each hypothesis has a proposed model; the carryover model supports the congruence hypothesis; and the predominant model supporting the incongruence hypothesis is the compensation model.

According to the carryover model children are expected to use the same interaction strategies in multiple types of relationships, applying behaviours or coping styles learned in one social domain to another. This model is linked conceptually to both attachment and social learning theories (Lockwood, Kitzmann, & Cohen, 2001). In terms of attachment theory children's early experiences with their primary caregivers (usually their mother) forms the basis for their expectations in other intimate relationships, therefore children who have secure relationships with their mothers would be expected to have positive interpersonal relations with other significant individuals in their lives, including both their siblings and friends. Social learning theorists argue that children's social skills and behaviours are generalized from their family environments to their peer relations; therefore what is learned through interactions with a sibling would be applied to interactions with peers.

A number of studies provide support for the carryover model and therefore the notion that positive qualities in the sibling relationship are associated with more positive peer relationships and vice versa. For example, research has shown that children who are aggressive in their sibling interactions are also more aggressive to their peers (Stormshak, Bellanti, Bierman, & Conduct Problems Prevention Research Group, 1996; MacKinnon-Lewis, Starnes, Volling, & Johnson, 1997), children with sibling relationships characterized by high warmth show better social adjustment at school than children with low warmth sibling relationships (Stormshak, Bellanti, Bierman, & Conduct Problems Prevention Research Group, 1996; Hetherington, 1988), and children in high conflict and low warmth sibling relationships have poorer best friendships than children with warmer sibling relationships (McCoy, Brody, & Stoneman, 1994).

Although a number of theories exist to explain the incongruence of sibling and peer relationships it is most often attributed to a process of compensation; whereby the

quality of sibling and peer relationships differ as one is compensating for or balancing out the other (Lockwood, Kitzmann, & Cohen, 2001). The basic premise of the compensation model is that children who lack certain social experiences in one relationship (e.g. emotional intimacy) will pursue those experiences in the context of other relationships, compensating for an unsatisfactory relationship in one domain by putting more effort into relationships in another domain (Updegraff & Obeidallah, 1999). Support for the compensation model comes both from studies showing that children with more negative sibling relationships have more positive peer relations (Volling, Youngblade, & Belsky, 1997; Mendelson, Aboud, & Lanthier, 1994; Stocker & Dunn, 1990) and from studies that show children with more positive sibling relationships having more negative peer relations (Volling, Youngblade, & Belsky, 1997; East & Rook, 1992). Other theories attempting to explain incongruent patterns between sibling and peer relationships are developmental in nature; suggesting that both sibling and peer relationships change in nature and importance across developmental stages. It has also been suggested that the sociocognitive skills necessary to develop relationships with siblings versus friends differ so that some people are more successful in only one of the two domains (Updegraff & Obeidallah, 1999).

Theory and research together do not provide support for there being just one single pattern in sibling and peer relationships. The inconsistency suggests a number of patterns may exist. Indeed there are also reasons to expect few associations between sibling and peer relationships; friendships do not involve rivalry for parental attention and love, and friends are chosen whereas siblings are not (Cutting & Dunn, 2006). Therefore, despite the two competing theories described above, research evidence does not unequivocally support either theory. Updegraff, McHale & Crouter (2002) attempted to end the inconsistencies in findings by both comparing developmental differences in the two relationships and determining whether individual differences in one relationship could be explained by experiences in the other. Thus, using two distinct approaches (developmental versus individual differences) to explore the links between sibling and friend relationships. Using a rationale based on developmental theory the authors focused on two variables; emotional intimacy and relational control. With regards to relational control both a strong positive correlation between average

levels of sibling and friendship control, and similar patterns of change in adolescents' control with siblings and friends show a connection across the two relationships. This shows support for the congruence hypothesis. However the findings were not so straightforward for the variable emotional intimacy. Whilst there was no evidence connecting either average levels of, or patterns of change in, sibling intimacy to firstborns' friendship intimacy, for second born siblings both their older sibling's sex and their own reports of sibling intimacy were linked to their friendship intimacy. Second born adolescents with opposite sex siblings reported more intimacy with their best friends than second born adolescents with same sex siblings. In addition having an older brother was associated with increases in friendship intimacy over time for second born girls. The authors suggested that the importance of intimacy with same sex peers at this developmental stage had prompted those with opposite sex siblings to look outside of the sibling relationship for intimacy with a same sex peer. That this was found to be true of younger sisters but not younger brothers led to the authors proposing that sex socialization pressures, which place greater emphasis on girls' emotional intimacy, were reflected in this finding. Updegraff et al.'s study served to demonstrate that the previous inconsistencies in research may be due to certain structural features of the relationships such as birth order and sibling sex constellation being ignored.

5.3 The role of sibling conflict in adjustment

Intense, constant conflict in the sibling relationship has been shown to lead to adjustment difficulties for the individual (as discussed in section 5.1). However a certain amount of conflict is normative in the sibling relationship (Stocker Burwell, & Briggs, 2002). Sibling conflict is more intense than in other relationships due to several characteristics of the relationship: siblings have a greater familiarity with, and access to, one another compared to other relationships; sibling relationships represent forced contact in an intense, complex, long term relationship before sufficient social competence has developed; there is often an unequal distribution of power and dominance between siblings; and siblings share many common resources, often fighting over parental attention, personal property, and privacy (Sherman, Lansford, & Volling,

2006; Bedford, Volling, & Avioli, 2000; Volling, Youngblade, & Belsky, 1997; Katz, Kramer, & Gottman, 1992).

Research in this area suggests that a certain amount of conflict (though not aggression) in the sibling relationship may be beneficial, particularly in terms of sociocognitive development (Bedford, Volling, & Avioli, 2000). It is argued that the frustration of conflict prompts children to summon their cognitive resources to argue and reason at a mature level (Dunn & Brown, 1994). Sibling conflict deals with the issue of how a person should treat another, these interactions often violate the limits of acceptable behaviour teaching children where those limits lie, and how far they can test these limits before provoking retaliation or punishment (Raffaelli, 1992). The sibling relationship is unique in terms of conflict; the conflict itself is particularly intense and the relationship is not a voluntary relationship that may be dissolved following conflict like any other peer relationship may be. It has been suggested that the obligatory nature of the sibling relationship provides an ideal opportunity for siblings to learn about negotiation, turn taking, compromise, how to tolerate negative affect (due to the high intensity of conflict and emotion), and develop conflict mastery skills (McHale, Kim, & Whiteman, 2006). These skills aid sociocognitive development (Foote & Holmes-Lonergan, 2003) develop social competence and encourage deidentification and identity formation (Raffaelli, 1992). The fact that sibling relationships have been found to afford more conflict than best friendships has led researchers to propose that the differentiation of cognitive schemas of relationships with siblings and best friends is itself a social advantage; the children have recognized that relationships with best friends are voluntary relationships, which can be ended by unresolved conflict, whereas the involuntary nature of sibling relationships makes them a safe forum for constructive conflict which leads to the development of conflict resolution or handling skills (Gleason, 2002).

Children's earliest exposure to conflict management is within family conflict situations and is therefore be critical in both modelling and rewarding conflict skills which can eventually be transferred from the family environment to other interpersonal settings (Herrera & Dunn, 1997). Sibling conflicts specifically, teach children how to negotiate very emotional disputes, due to the high level of emotional intensity involved in the

sibling relationship and, therefore, sibling disputes (Dunn, 1998). This intensity motivates children's development and use of sophisticated sociocognitive skills, applied in the interests of both conflict partners, in order to find ways both to avoid conflict in the future, and to manage it when it does erupt (McHale, Kim, & Whiteman, 2006; Bedford, Volling, & Avioli, 2000; Slomkowski & Dunn, 1992). The avoidance of future conflicts requires social cognitions such as tolerance, self-control, and insight into another's thoughts feelings and behaviour. Necessary skills for the management of conflict include negotiating, compromising, turn taking, and the subordination of one's own desires in the interests of ending the conflict (Slomkowski & Dunn, 1992; Katz, Kramer, & Gottman, 1992). Children model their sibling's conflict handling skills and more specifically their use of argument. Herrera and Dunn (1997) found that a sibling's use of argument that considered the child's views in a sibling dispute (an other-oriented argument) was positively associated with use of other-oriented argument by the child during later conflicts with a friend, and positively associated with the proportion of conflicts in which the child offered the compromise ending the dispute. Researchers state that all of these conflict skills learned within the sibling dynamic are transferable to other social contexts and lifelong (Bedford, Volling, & Avioli, 2000). The importance of sibling conflict for the development of these skills is further demonstrated by singletons being at a disadvantage with regards to these skills (Kitzman, Cohen, & Lockwood, 2002).

The mastery of conflict handling skills described above involves appreciation of the other person's perspective, itself a sociocognitive skill, and is therefore assumed to reflect the development of social understanding and, therefore, greater social competence (Dunn & Brown, 1994). In particular the use of other-oriented arguments necessitates the ability to understand another person's mental states and the relationship between these mental states and the person's behaviour (Foote & Holmes-Lonergan, 2003). A number of studies of young children have confirmed that children develop greater social competence as a result of handling disputes with their siblings (Bedford, Volling, & Avioli, 2000). Katz, Kramer, & Gottman (1992) found that siblings' use of other-oriented arguments (demonstrating affective perspective taking) at 33 months old was positively related to their social competence levels three years later. At age six

these children were successfully resolving disputes with friends, using a higher level of argument (Herrera & Dunn, 1997). Slomkowski and Dunn (1992) found that children's use of argument with a sibling accounted for a significant portion of the variance in later sociocognitive performance, however these correlations were only found for arguments with a sibling not with mothers, suggesting that conflict in the sibling relationship provides an independent context for children's sociocognitive development.

Conflict with another person leads to a process of accentuating differences between individuals (Bedford, Volling, & Avioli, 2000; Katz, Kramer, & Gottman, 1992). Sibling conflicts encourage children to individuate when they take a stance against their sibling or their sibling takes a stance against them (Volling, Youngblade, & Belsky, 1997), this can lead to a better understanding of oneself and to identity formation (Raffaelli, 1992). It has been suggested that siblings actively differentiate themselves from one another to reduce competition and rivalry and establish their unique place in the family (McHale, Kim, & Whiteman, 2006). If this is the case then the sibling relationship effectively forces each member of the dynamic to create and explore their own identity, an important developmental task. Social relationships form the contexts within which people do explore possible identities and the involuntary nature of the sibling relationship, and therefore siblings' ability to disagree openly, provides a safe context in which to do this.

The research discussed above demonstrating the benefits of sibling conflict for conflict handling skills, sociocognitive development, and identity development serve to highlight the process by which experiences with a sibling (even those that could be considered adverse, such as conflict) often result in positive personal gains for the individual.

5.4 Siblings as sources of support

The majority of studies assessing the influence, or buffering effect of, social support on children in conditions of ecological risk have focused on support provided by parents,

other adults and peers. This trend serves to reflect the focus of research on social support in general. However this does mean that relatively few studies address sibling support as a possible protective factor for children at risk and therefore relatively little is known about the extent of influence this support may have. Findings from research that has been conducted in this area consistently show individuals receiving high levels of sibling support to be less lonely and depressed and have higher levels of self esteem and life satisfaction than those receiving low levels of sibling support (Milevsky, 2003; Cicirelli, 1995). Siblings are considered to be an important source of support during times of stress. Findings suggest that sibling relationships actually protect children from adverse life circumstances (Volling, 2003) with sibling support having been shown to have a protective effect for preadolescents in troubled families (Widmer & Weiss, 2000). Along similar lines Deater-Deckard, Dunn, & Lussier (2002) found that for some children who had experienced family transitions, sibling warmth may operate as a protective factor. Dunn, Slomkowski, & Beardsall's 1994 study found that children faced with negative life events, such as difficulties with children at school, maternal illness, and personal illnesses, reported being more intimate with their siblings following the negative event. Confiding in a sibling was much more commonly reported than confiding in a friend. In fact friendly affectionate behaviour between siblings was found to be positively related to the aforementioned negative event and in detailed interviews the majority of children described their siblings as supportive during these times. In an earlier study Sandler (1980) found the mere presence of siblings to have a stress buffering effect for economically disadvantaged children; multiple regression analysis on parental assessment of life stress and adjustment in their children yielded interactions for the presence of a sibling and life stress. Siblings' roles as sources of support have been found to vary as a function of the domain of sibling interaction with siblings assuming more complimentary roles (i.e. older sibling supporting younger sibling) in relation to non-familial experiences but more reciprocal roles with respect to familial situations, whereby siblings assume equally supportive roles regardless of birth order (Tucker, McHale, & Crouter, 2001). In other words, when a situation regarding the family arises siblings will comfort and support each other equally but in situations that aren't related to the family birth order plays a role, with the older sibling providing more support to the younger sibling than the younger sibling

provides to them. It has been suggested that mutual support occurs in the familial domain because siblings have more equivalent levels of familiarity and expertise. For example, when parent-adolescent relationships are conflicted adolescents give more support to their siblings. Siblings discuss their parent child relationships with each other most often when things go wrong (Tucker et al., 2001) suggesting that siblings provide one another with advice and assistance on how to deal with difficult family situations. In accordance with this Dunn (1996) surmised that siblings can become closer and more supportive in the face of major life events, although day to day stress is linked to more negativity in the sibling relationship. The Section below will focus exclusively upon siblings' provision of support following such a major life event; parental divorce.

5.4.1 Sibling support in disharmonious homes and after parental divorce

The aforementioned sibling support and increased intimacy Dunn et al. (1994) reported following a negative event is notably absent during marital disharmony and immediately following parental divorce (Hetherington, 1988; MacKinnon, 1989; Jenkins, 1992; Dunn et al., 1994), particularly in the case of boys (Hetherington, 1988). Jenkins (1992) assumes a social learning perspective to explain the likely development of hostile sibling relationships in disharmonious homes; hostility is modelled in the parents' relationship so the children learn that hostility is an appropriate response to conflict. Hetherington and Stanley-Hagan (1999) offer an alternative explanation, which they named the 'contamination hypothesis', this suggests that the conflict between parents promotes animosity and conflict in the sibling relationship as a result of a general increase in stress in family life. However if children have a close sibling relationship this can offer protection against the negative effects of stress associated with disharmonious homes as close sibling relationships are characterised by a level of emotional intensity that includes support. Jenkins (1992) found that children in disharmonious homes who did have a close, supportive sibling relationship had less emotional and behavioural difficulties than children in disharmonious homes without a close, supportive sibling relationship. This association (between low levels of emotional and behavioural difficulties and the presence of a close sibling relationship)

was only evident in the children from disharmonious homes, suggesting that it is only the children from disharmonious homes who need to find the additional support and do so in a close sibling relationship. A further explanation for this occurrence is provided by Milevsky (2005) who suggests that siblings already in a close, supportive relationship prior to marital discord/divorce (such as those described by Jenkins) attempt to compensate for any reduction in parental attention either during or immediately after divorce by providing each other with further support. This is known as the 'compensation hypothesis' (Hetherington & Stanley-Hagan, 1999) or a 'compensatory pattern of support' (Milevsky & Levitt, 2005) whereby an individual compensates for a specific relationship that is not supplying desired provisions by turning to a different relationship to provide the missing provisions.

However the possible compensatory effects of sibling support have only been studied by a small number of researchers, and have mainly focused on children and early adolescents in the absence of peer support (Seginer, 1998; East & Rook, 1992; Van Aken & Asendorpf, 1997). East and Rook's (1992) findings suggested that although peer-isolated children do turn to siblings for support, which does provide some positive outcomes, sibling support does not fully protect against the negative consequences of low peer support. Seginer (1998) only found one significant interaction between adolescent peer acceptance and sibling warmth, suggesting a negligible compensatory effect. Van Aken & Asendorpf (1997) found no compensatory effects of sibling support in relation to self-esteem in a sample of young children with either low parental, classmate, or friend support. These findings suggest little evidence for compensatory effects of sibling support in childhood and early adolescence. Milevsky (2005) was the first researcher to study sibling compensatory processes in the emerging adult population (18 to 30 years old). Contrary to previous studies conducted with children and early adolescents, Milevsky found sibling support to compensate for low support in other relationships. Sibling support compensated for low mother support on depression and self-esteem and for low father support on loneliness, self-esteem and life satisfaction. Sibling support also compensated for low friend support on all of the well-being measures and on self-esteem, depression and life satisfaction. These findings suggest that sibling support does compensate for low support from other members of an

individual's social network, at least in the case of young (or emerging) adults. Milevsky explains the contradictory findings from studies with younger samples as being due to developmental changes in the studied relationships across the life span. However no research has as yet been conducted into changes in sibling support across the lifespan and the only study addressing changes in sibling support during adolescence found perceived sibling support to be stable from age 12 to 17 (Branje, Van Lieshout, Van Aken, & Haselager, 2004; Scholte, Van Lieshout, & Van Aken, 2001).

5.5 Sex differences in sibling interactions

Research conducted on sex differences in sibling relationships were prompted by early findings suggesting that older female siblings are socialized to be more nurturing and prosocial than male older siblings (Sutton-Smith & Rosenberg, 1970; Koch, 1956). If this is the case then sibling relationships led by older girls should be more harmonious than those led by older boys. However although this hypothesis has achieved some support, findings have been inconsistent (Teti, 2003). In fact the significance of the effects of older siblings' sex upon sibling relationship quality has since been found to vary according to the age of the siblings (Dunn, 2002). For siblings in early childhood the findings are mixed and inconsistent. The influence of the older sibling's sex appears to increase in middle childhood and particularly in late middle childhood whereby findings suggest that older sisters are indeed more likely than older brothers to be in confiding relationships with their younger sibling (Dunn, Slomkowski, & Beardsall, 1994; Burhmester, 1992; Burhmester & Furman, 1990). In late adolescence sibling relationships of girls have been shown to be more positive than those of boys in several emotional and supportive characteristics (Tucker, Barber, & Eccles, 1997). For example, older sisters have been shown to provide the most support to younger sisters regarding social issues. In fact in all types of families, sisters have been found to be more supportive and warm, and less antagonistic and conflicted than brothers (Deater-Deckard, Dunn, & Lussier, 2002). The sex constellation of the sibling dyad achieves significance during adolescence, it has been suggested that this is perhaps due to intensification in sex socialization pressures (Tucker, McHale, & Crouter, 2001). In

adulthood the influence of sex continues with people considering their relationships with sisters to be of particular importance, leading researchers to surmise that this is due to females' emotional expressiveness and traditional role as nurturers (Dunn, 2002). Indeed findings from another study suggest that female siblings tend to increase cohesion and decrease conflict within the sibling relationship, while male siblings have the reverse effect (Weiss, Schitaffino & Ilowite, 2001). An incidental finding by Cassidy and Newport (1996) suggested that females are more expressive than males, and that this too is related to cohesion and conflict in family relationships such as the sibling relationship. These findings appear to support the aforementioned early hypotheses regarding sex and the sibling relationship whilst suggesting a positive correlation between the age, or socio-emotional development of the siblings, and the influence of sex upon the sibling relationship.

Studies taking sibling sex constellation into account following parental divorce have found boys in divorced families to be more aggressive, non-compliant and impulsive than boys in married families (MacKinnon, 1989), suggesting that male sibling dyads may be at particular risk for negative interactions following parental divorce. Indeed Hetherington (1988) found that, post parental divorce, negative power (i.e. coercion and aggression) was higher for older brothers than for older sisters, especially in interactions with a male sibling, although MacKinnon (1989) found older boys from divorced families are more conflictual when interacting with younger sisters. These findings taken together led researchers to conclude that dyads containing an older male sibling within a divorced family engage in highly abusive behaviour (MacKinnon, 1989).

Early Studies examining the collective effect of both siblings' sex upon the dyadic relationship suggested that same sex siblings feel closer than siblings in a mixed sex dyad (Dunn & Kendrick, 1981; Pepler, Abramovitch, & Corter, 1981). By 14 months infants in same sex dyads were found to direct more prosocial behaviour toward each other than those in mixed sex dyads (Dunn & Kendrick, 1981) and negative, antagonistic behaviour was found to increase in mixed sex dyads between the secondborns' ages of 20 and 38 months (Pepler, Abramovitch, & Corter, 1981). It was

hypothesised that same sex siblings had more shared interests and activities than mixed sex siblings and that this accounted for closer same sex sibling relationships. However further research findings have been mixed. Minnett, Vandell, & Santrock (1983) reported the opposite; that in their study of 7 year olds same sex sibling dyads showed more negative behaviours toward each other than mixed sex dyads. Male same sex dyads have been found to be less pro-social than female same sex dyads (Abramovitch, Pepler, & Corter, 1982) and Furman and Buhrmester (1992) found sisters have closer relationships than brothers. Somewhat contrary to this Stoneman, Brody, & MacKinnon (1986) also found interactions were more positive with an older female sibling rather than an older male sibling, but least positive in same sex dyads. Studying college age siblings, Stocker, Lanther, and Furman (1997) reported that mixed sex dyads were less conflictual than same sex dyads. Despite substantial further research no clear picture has emerged regarding the same sex hypothesis. It is possible that, like the influence of the older sibling's sex upon the sibling relationship, the collective effect of both siblings' sex may relate in some way to the siblings' age and socio-emotional development. However a number of longitudinal studies would be required to see if this is the case.

The first study to describe the longitudinal course of sibling relationships from middle childhood through adolescence showed that, in the context of the sibling relationship, some gendered patterns become more salient in adolescence (Kim, McHale, Osgood, & Crouter, 2006). Kim et al. (2006) found that the main effects of sex (that sisters reported higher intimacy levels than brothers overall), combined with the effects of dyad constellation (intimacy increased in mixed sex dyads but remained stable in same sex dyads), meant that, by late adolescence, brother-brother pairs reported the lowest levels of intimacy overall. These findings are consistent with ideas about the greater significance of intimacy in females' relationships, and of the importance of the female role in family relations. Female siblings are no less negative and conflictual, but are more supportive and positive in their sibling relationships than are male siblings (Furman & Buhrmester, 1992). As such, warm relationships with sisters may be most protective (Kim, McHale, Crouter & Osgood, 2007). Indeed in times of stress compassionate caring relationships in female, but not male siblings, have been found to

protect against increasing externalizing behaviour (Hetherington, 1989). The sibling relationship itself appears to be more important for females' adjustment than for males'. Oliva and Arranz (2005) found female adolescents' sibling relationships had significant positive correlations with self esteem and life satisfaction, whereas the strength of a males' sibling relationship was not related to personal adjustment. Although previous research has acknowledged variations in sibling relationships as a function of sex, whilst research is beginning in this area, still very little is known about the significance of the sex constellation of the sibling relationship upon individual outcomes associated with sibling relations, such as socio-emotional development and adjustment. Even less is known about how the sex composition of sibling relationships may alter the effects of parental conflict or divorce on children's adjustment (Davies & Lindsay, 2001).

5.6 Developmental stability of sibling relationships

5.6.1 Childhood

During the course of early childhood siblings become increasingly involved in social exchanges, considering each other to be playmates (Oliva & Arranz, 2005). As rates of involvement increase so too do prosocial behaviours (McHale, Kim, & Whiteman, 2006). Asymmetries in sibling relationships are apparent during this developmental stage; older siblings tend to lead social exchanges; directing a disproportionately larger number of both prosocial and agonistic behaviours to the younger sibling than the younger sibling did to them. Younger siblings are more likely to imitate their older siblings than the reverse (Dunn & Munn, 1986) and older siblings are more likely to see younger siblings as intrusive and annoying than the reverse (Stewart, Mobley, Van Tuyl, & Salvador, 1987). Complementarity is therefore evident in the role structure of sibling relationships at this stage; the two individuals differ in developmental levels and competencies and the children themselves report differences in their sibling relationship along a power-status dimension (McHale, Kim, & Whiteman, 2006; Teti, 2002). Siblings appear to be positively and mutually involved during middle childhood, though higher rates of conflict are observed during this period. It is suggested that as siblings

have such close contact during middle childhood, with siblings spending more time together during this period than with parents or friends (McHale & Crouter, 1996), such a high level of involvement prompts a sustained increase in conflict behaviours. At this stage of development sex constellation effects are inconsistent; it is in adolescence that the importance of sex and the sex composition of the dyad is emphasized (Dunn, Slomkowski, & Beardsall, 1994).

5.6.2 Adolescence

Following a normative pattern of individual development processes siblings become less involved in adolescence, youths' increasing interest in establishing themselves in a wider social network outside of the family results in lower levels of sibling involvement (Kim, McHale, Osgood, & Crouter, 2006). Consequently positive aspects of sibling relationships decrease from middle childhood to early adolescence (Volling, 2003), sibling conflict increases (Brody, Stoneman & McCoy, 1994) and young adolescents report more negativity in their sibling relationships (Buhrmester & Furnam, 1990). Longitudinal analyses suggest, however, that declines in sibling warmth and closeness from middle childhood through to early adolescence stabilize or even reverse later in adolescence (Kim, McHale, Osgood, & Crouter, 2006). The social cognitive advances of adolescence are thought to engender greater depth in sibling relationships, even in the face of some distancing or individuation. Consistent with this perspective Cole and Kerns (2001) found that some positive elements of the sibling relationship, such as intimate exchange, increased in late adolescence, following a decline in late childhood and early adolescence. As siblings mature, the later born siblings grow more competent and independent, their developmental statuses become similar and therefore the role structure of the sibling relationship becomes more egalitarian (Steinberg & Morris, 2001; Buhrmester & Furnam, 1990).

While it is not clear whether due to less involvement or increased egalitarianism research suggests that sibling conflict begins to decline in adolescence, with this decline thought to continue through to adulthood (Cole & Kerns, 2001; Stewart et al., 2001). Previous inconsistencies in research findings regarding sibling conflict in adolescence

have been recently explained by developmental patterns differing as a function of birth order, a structural characteristic of the relationship (Kim, McHale, Osgood, & Crouter, 2006). Similarly sibling intimacy during adolescence has been found to vary as a function of dyad sex constellation, another structural characteristic of the dyad (Kim, McHale, Osgood, & Crouter, 2006). These findings taken together suggest that structural characteristics of the sibling dyad have different implications at different points of development.

5.6.3 Emerging adulthood

Because young adulthood is a period during which relationships with friends and families are undergoing substantial transformation research on emerging adults is necessary to understand better this developmental stage (Sherman, Lansford, & Volling, 2006) particularly when siblings leave the parental home (McHale, Kim, & Whiteman, 2006). However the majority of research on sibling relationships has focused on children and older adults' sibling relationships (Milevsky, 2005). Levinson (1978, as cited in Milevsky, 2005) called the ages of 17-33 the 'novice phase' of development, likewise Arnett (2000) suggested the emerging adult years be viewed apart from adolescence or adulthood, however investigations on sibling relationships and their outcomes have not yet paralleled the emphasis given to the emerging adult population in other areas of study. What little research there is suggests that siblings continue to be important influences, even as adolescents begin spending less time with family members as they enter young adulthood (Carbery & Buhrmester 1998; D'Amico & Fromme, 1997). A number of changes occur within the sibling relationship during this life stage. The effects of birth order have been found to be minimal in emerging adulthood; the increases in egalitarianism and decreases in complimentary roles associated with this developmental stage mean birth order simply becomes less relevant (Tucker, Updegraff, McHale, & Crouter, 1999). Likewise conflict becomes a less salient issue during young adulthood; this is thought to be due to siblings leaving the family home and the common sibling disputes over property, privacy and personal space coming to an end as the siblings no longer live together (Sherman, Lansford, & Volling, 2006).

There have only been a few studies on sibling relations in emerging adulthood; and particularly few of those relate sibling relationships to individual adjustment and well being (Milevsky, 2005). Milevsky's (2005) study of compensatory effects of social support received from siblings in emerging adulthood was not only the first of its kind but also highlighted the significance of siblings as providers of social support for emerging adults and the implications of sibling support for individual well being at this life stage. Individuals receiving high levels of sibling support scored both significantly higher on self esteem and life satisfaction and significantly lower on loneliness and depression than individuals receiving low sibling support. In fact Milevsky found sibling support during emerging adulthood compensated for low support from other members of an individual's social network, such as parents and friends. This finding is contrary to previous work with children and adolescents whereby any compensatory effects of sibling support found in those earlier stages of development were negligible. This suggests that the changing relationships with both family members and friends that have been witnessed during this developmental stage may allow siblings to become the important influences and support figures that they have been found to be in adulthood.

6 Stress, coping, and resilience

Much of the literature on divorce has focused on one specific aspect of child adjustment meaning that each study contains a unique perspective on the meaning of adjustment. For the purposes of this thesis psychological distress will be measured and used as an index of psychosocial adjustment. Psychological distress is an appropriate indicator of adjustment for this programme of research as it refers to a broad domain of psychological functioning, rather than one specific aspect. This chapter therefore introduces the concepts of stress and coping with distress. Different coping styles are discussed, along with the literature concerned with known psychosocial factors involved in the stress and coping process.

6.1 Introduction to coping, and resilience

In general, children show variability in their responses to risk and adversity; some are harmed, some show initial difficulties followed by adjustment and recovery, and some are resilient (Chase-Lansdale, Cherlin, & Kiernan, 1995). Resilience has been defined as 'the process of, capacity for, or outcome of successful adaptation despite challenging or threatening circumstances' (Masten, Best, & Garmezy, 1991, p.426). Resilient children have within their character or their environment protective factors that help to buffer them from the negative forces or stressors to which they are exposed (Masten & Coatsworth, 1998). In this case, the effect of a stressor such as parental divorce is proposed to have a reduced effect in the context of protective or buffering factors. However Laumann-Billings and Emery (2000) found that although most children from divorced families are resilient their distress can be significant nonetheless. Resilience is not invulnerability; successful coping is often tinged by short-term and long-term distress and emotional well-being involves much more than the mere absence of behavioural or psychological problems.

Parental divorce is classed as a major life event; an undesirable, infrequent event with which a person has little experience, and as such is very challenging to coping resources (Williams & McGillicuddy-De Lisi, 2000). How offspring cope with parental divorce

has the potential to influence future responses to stress at home and in other social contexts. These coping responses may become generalized to other situations perhaps having positive or negative associations with psychological adjustment (Shelton & Harold, 2007); therefore coping behaviour itself may modify the impact of parental divorce on offspring adjustment.

Consistent with most models of regulation, coping researchers posit dual-process models of coping. These models therefore incorporate both the target to be regulated; in this case the stress reaction, an immediate automatic response to a stressful situation, and the set of processes that regulate the target; regulatory efforts that are enacted in response to the stress reaction (Skinner & Zimmer-Gembeck, 2007). As the regulatory coping process is primarily concerned with the regulation of distress it unfolds in the context of a situation that is appraised as being both personally significant and as taxing or even exceeding the individual's coping resources (Lazarus & Folkman, 1984). The process is complex and multidimensional; sensitive to both environmental demands and resources, and to personality dispositions influencing stress appraisal and coping resources (Folkman & Moskowitz, 2004). There is some debate as to whether coping is an involuntary reaction or an intentional response. Some researchers regard coping as people's conscious, intentional attempts to regulate cognitive, emotional, behavioural, and physical responses to stress (e.g. Compass, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001; Connor-Smith, Compass, Wadsworth, Thomsen, & Saltzman, 2000). However, it is generally agreed among coping researchers that stress also evokes involuntary responses, not under the individual's control, which may be a product of temperament and prior experience and as a result both involuntary and intentional coping responses are measured in coping inventories (Carver, 2007).

6.1.1 Coping style

A potentially unlimited number of coping responses led to responses being clustered together into categories of coping responses. These coping responses or styles were clustered either rationally; using theory based categories, empirically; using factor

analysis, or using a blend of both rational and empirical techniques (Folkman & Moskowitz, 2004).

6.1.1.1 Rational and empirical approaches to categorization

One of the earliest categorizations of coping styles (Folkman & Lazarus, 1980) used a rational approach to distinguish two functions of coping: problem focused coping; addressing the problem causing the distress, and emotion focused coping; reducing the negative emotions or distress resulting from the problem. Folkman and Lazarus' (1980) theoretical categorization of problem focused and emotion focused coping styles is much used in the coping literature, indeed other conceptualizations of coping styles often fit these categories. An example of this is Billings and Moos' (1981) three factor conceptualization which described two factors involving problem focused coping; active cognitive, and active behavioural, and one factor involving emotion focused coping; avoidance.

Researchers proposed the addition of a third category; meaning focused coping, in which the individual searches for meaning in adversity, using cognitive strategies to manage or modify the meaning of the situation (Park & Folkman, 1997). This concept can be likened to both cognitive reappraisal; an emotion focused way of coping which takes positive value from negative events, changing the meaning of a situation without changing it objectively, and the more recent concept of perceiving benefit (benefit finding) as a coping strategy; whereby an individual experiencing stress actively searches for situational benefits, arriving at the conclusion that they have benefited from the stress. These concepts are being further developed following the interest in what has been termed stress related growth (Park, Cohen, & Murch, 1996), where an individual under great stress reports finding meaning in the stressor or experiencing other positive life changes as a consequence of the stressor (Affleck & Tennen, 1996).

Categorizations of coping styles derived from empirical studies also include the three theoretically derived factors; problem focused coping, emotion focused coping, and meaning focused coping, but often with the addition of a fourth factor based on support

seeking; social coping (Folkman & Moskowitz, 2004). Factor analyses carried out on responses to the COPE inventory (Carver, Scheier, & Weintraub, 1989) consistently reveal four dimensions of individual differences in coping dispositions which reflect the four factor solution described above: active coping (a problem focused coping style), social support seeking (social coping, denial or disengagement), emotion focused coping, and positive reinterpretation (both meaning focused coping styles). Zautra, Sheets, and Sandler (1996) compared several empirical structures of coping, including Folkman and Lazarus' (1980) two factor model and Billings and Moos' (1981) three factor model (active, avoidant, and social coping) finding the four factor solution to be a better fit to their data than any other.

It is acknowledged both rationally and empirically that distinct coping responses have interrelated effects on one another (Carver, 2007; Folkman & Moskowitz, 2004), for example problem focused coping is often used with meaning focused coping. The effective usage of one coping response may facilitate another response, for instance engaging in effective emotion focused coping, such as distraction or avoidance, may reduce anxiety. The reduction in anxiety allows an individual to consider the problem more calmly, permitting them to undertake more effective problem focused coping. An example of this phenomenon in recent research is Affleck and Tennen's (1996; Tennen & Affleck, 1999) work on a coping response called benefit reminding; effortful cognitions in which an individual reminds themselves of the possible benefits arising as a result of the stressful experience. The assumption is that benefit reminding can only be used as a coping strategy by an individual who has already perceived some benefit or positive consequences of the stressor, thus benefit reminding can only take place after the occurrence of meaning focused coping such as positive reappraisal.

6.1.1.2 Coping with parental divorce and conflict

Coping processes are adaptive, and therefore need to be evaluated in the specific stressful context in which they occur. A particular coping process may be effective in one situation but not in another depending, for example, on the extent to which the situation is perceived to be controllable; in coping with pain problem focused coping

has been found to have negative effects (Newth & DeLongis, 2004). Very few studies have been conducted with the purpose of determining which coping methods are used in response to parental divorce, and whether or not specific coping styles are related to adjustment. Findings from the few studies that have suggest that the most common coping response to parental divorce is active cognitive coping, which is actually associated with better adjustment; for example lower levels of both anxiety and depression (Sandler Tein, & West, 1994; Armistead et al, 1990; Krantz, Clark, Pruyn, & Usher, 1985; Radovanovic, 1993). The use of avoidant coping styles as a response to parental divorce has been found to be associated with more negative outcomes, particularly for females (Armistead et al, 1990). Sandler, Tein, & West (1994) suggested that the use of avoidant coping may be particularly ineffective in response to parental divorce because the immediate anxiety reduction afforded by avoidance is less important than dealing with the recurring stressors facing children of divorce. In contrast, the active cognitive coping dimension includes problem solving and positive cognitive restructuring. Problem solving may be used to find and assess ways of changing situations that are amenable to change, such as adapting to a move following parental divorce, and positive restructuring may enable offspring to think about events in less threatening ways (Sandler et al, 1994). It is thought that this coping style is preferred in response to parental divorce because children recognize that they are unable to change their parents' divorce but they are able to control their own response to it (Armistead et al, 1990).

Studies of offspring's coping responses to interparental conflict (an extremely common reoccurring stressor for children post parental divorce), suggest that marital conflict exerts negative effects on children through the increased use of maladaptive coping strategies and that these coping styles are associated with increased psychological distress. It has been suggested that children are actually limited to non-constructive or maladaptive coping strategies in the context of interparental conflict (Kerig, 2001); children exposed to interparental conflict are more likely to use coping characterized by the release of frustration, risk taking, and confrontation, behaviours that are associated with problematic psychological adjustment. Although children coping with stress by venting their frustration may derive short term benefits by reducing their level of

emotional arousal, findings suggest that this form of coping is ultimately ineffective in the context of interparental conflict (Shelton & Harold, 2007).

6.2 Psychosocial moderators of distress

Research on psychosocial processes in both physical and psychological health has identified a number of variables, both social and psychological, which moderate the effects of stress upon health. It is thus understood that aspects of an individual's personality interact with their social and environmental factors to facilitate or impede coping. Therefore the coping process is not only influenced by the external resources available to an individual, but also by the internal resources the individual has (Lu & Chen, 1996). Cassidy (1999) identified seven dominant cognitive variables in research that have been shown to have a significant direct effect in predicting perceived stress, thus helping to understand the 'person aspect of the stress process' (Cassidy, 2000, p.294). The seven variables Cassidy identified are: attributional style; locus of control; optimism and pessimism; perceived social support; problem solving style; achievement motivation; and emotional reactivity. These cognitive factors have also been identified in the literature as being potential shapers of individual resilience (Tusaie, Puskar, & Sereika, 2007) and as such can be viewed as buffers or protective factors (i.e. moderators) of the stress-adjustment relationship.

6.2.1 Attributional Style

Abramson, Seligman, and Teasdale (1978) suggested that attributions were made on three dimensions: internal-external, stable-unstable, and global-specific. The dimension of internal or external causality essentially reflects attributions about control; the belief that events are in our control (internal) or outside of our control (external). The stable-unstable dimension reflects attributions about temporal stability; whether the cause of distress is always likely to be present (stable), or is limited to that particular instance (unstable). The global-specific dimension relates to situational stability; whether or not things will always be outside of the individual's control (global), or just in the current situation (specific). Attributions about both temporal and situational stability essentially

reflect a dimension of optimistic versus pessimistic thinking. Attributional style as a cognitive factor in the stress literature therefore hinges upon two separate factors, control and optimism/pessimism, and is therefore subsumed by these two alternative factors, each of which has a literature of its own (Cassidy, 1999).

6.2.2 Locus of control

Locus of control represents a core theme or variable effecting stress. This is essentially the concept of perceived control. It has been widely established that the perception of control reduces the impact of a stressful life situation and the effects of generalized life stress (Cassidy, 1999), accordingly the perception of control is a known indicator of subjective well-being (Cicirelli, 1989). The dominant understanding of the relationship between locus of control and life stress holds that individuals who define life events as outside of their control will cope less effectively with stress, rendering them more likely to experience psychological and physiological distress than individuals with internal locus of control beliefs. Thus internals (i.e. people who perceive themselves as having some form of control in a situation) 'display superior mastery and coping skills' (Krause & Stryker, 1984, p.783). However, the direct effect that locus of control beliefs are understood to have upon psychological and physiological distress has been debated. More recent research suggests that locus of control beliefs do not have a direct effect upon stress but, instead, contribute to direct coping styles (positive problem-solving styles) which, in turn, have a direct effect upon stress (Petrosky & Birkimer, 1991). It has also been suggested that locus of control beliefs interact, in some way, with social support (Soloman, Mikulincer, & Avitzur, 1988) and optimism (Scheier & Carver, 1987).

Power and control have been investigated within the systems model of family therapy and are considered to be one of three main dimensions, along with inclusion and emotional proximity, in family problems. Coping research with children of divorce suggests that the increased use of emotion focused coping strategies following parental divorce and conflict is due to the perceived uncontrollability of the situation (Halpern, 2004). Children of divorcing or divorced parents have very little control over the

situation; they are confronting a stressor that is both persistent and seemingly irresolvable. The only thing they are able to control is their reaction to the situation and its consequences; which coping strategies they utilize. It has been suggested that perceived control may not be helpful to someone who has little opportunity to exert control in their current environment (Shapiro, Schwartz, & Astin, 1996). This may explain why the role of control in relation to family structure and in particular sibling interaction following a change in family structure seems to have been somewhat neglected. Efforts to control events may be moderated by their perceived or actual controllability, although as yet there is little empirical evidence to support this notion (Keeton, Perry-Jenkins, & Sayer, 2008).

6.2.3 Optimism & Pessimism

Dispositional optimism and pessimism have been found to be related to positive and negative adjustment, respectively, and are thus considered important predictors of psychological well-being. Dispositional optimism and pessimism are defined in terms of generalized expectancies concerning future positive (optimism) and negative (pessimism) outcomes (Scheier & Carver, 1985). Optimism (hope) and pessimism (hopelessness) have been a source of substantial debate in the literature and it is now generally agreed that, although related, they are separate, conceptually distinct constructs rather than two opposing ends of a single dimension as previously assumed (Extremera, Duran, & Rey, 2007; Catanzaro, Wasch, Kirsch, & Mearns, 2000). Optimism is well established as a buffer against life stress and a contributing factor in positive health, subjective well-being, and life satisfaction, while pessimism is seen as a major risk factor in perceived stress and depression and is therefore a contributor to psychological illness (Chang, 2002; Chang, Sanna, & yang, 2003; Chang, Maydeu-Olivares, & D'Zurilla, 1997). Because optimism and pessimism affects both how people look at the world (appraisal) and their behaviour in it (effort), they are likely to influence coping behaviours and thereby affect adjustment (distress).

Scheier, Weintraub, and Carver (1986), having studied optimism as a personality disposition, suggest that dispositional optimism has implications for the way in which

individuals deal with life stresses. This theory was derived from the theoretical model of Behavioural Self Regulation (Carver & Scheier, 1981), whereby expectations of successful outcomes cause people to renew their efforts to attain set goals; should disruption of goal related activities occur. Dispositional optimism, therefore, is a mediator between external stimuli; stressors, and an individual's response to those stimuli, which in turn affect adjustment; distress levels. Research demonstrates that optimists tend to cope more successfully than pessimists when confronted with stressful occurrences. Dispositional optimism is associated with better psychological adjustment than pessimism to stressors ranging from normal life stresses to extreme traumas (Solberg Nes & Segerstorm, 2006). Scheier, Weintraub, and Carver (1986) suggest that the divergent outcomes that optimists and pessimists experience are 'partly a function of the strategies they use to deal with stressful encounters' (Scheier, Weintraub, & Carver, 1986, p.1263). Indeed, dispositional optimism is associated with the use of positive reframing and benefit reminding as coping strategies, both meaning focused coping styles (Affleck & Tennen, 1996; Carver et al, 1993; Fontaine, Masteed, & Wagner, 1993). A strategy apparently favoured by optimists is problem-focused coping; favourable expectancies induce a return to problem-focused efforts. Accordingly Scheier and Carver (1985) found that optimism was associated with active attempts to deal with stressors in a problem focused way. This strategy can also be likened to a problem-solving style: approach style problem-solving. This reflects both a positive attitude to problems and a tendency to tackle them head on (Cassidy & Long, 1996). This phenomenon has been demonstrated repeatedly in the research; individuals with more positive expectations were not only less distressed when adverse events occurred, but also dealt with situations more actively than those expecting worse outcomes (Tusaie, Puskar, & Sereika, 2007; Carver & Scheier, 1998). Conversely negative expectancies (pessimism) lead to reduced effort and disengagement from goal pursuit; avoidance (Solberg Nes & Segerstorm, 2006).

The effects of optimism and pessimism upon the selection of coping strategies may be moderated by perceived control. It was initially thought that optimists would only cope well with situations within their control, due to their reliance on problem-focused coping. However, it has been found that rather than simply utilizing problem focused

coping styles optimists use more approach and less avoidance coping in both problem-focused and emotion focused categories, using the appropriate approach strategy for each stressor; problem focused for controllable stressors and emotion focused for uncontrollable stressors (Conway & Terry, 1992; Scheier, Weintraub, & Carver, 1986). Optimistic coping thus appears to be flexible in response to the demands of the stressor.

Despite the importance of optimism and pessimism in the psychological processes of health and illness, it has not been widely researched in relation to either adjustment following parental divorce or sibling relationships in general. However, with regards to sex differences, adult females report higher levels of pessimism than males, and males report higher levels of optimism than females (Extremera, Duran, & Rey, 2007; Nolen-Hoeksema, 2001).

6.2.4 Social support

Membership of social support networks is thought to symbolize the connection between the external conditions of people's lives; their social capital, and their internal cognitive emotional worlds; their resilience (Pinkerton & Dolan, 2007). Social support is a multi dimensional concept consisting of different sources of support; such as parents, siblings, and peers, and different types of support; such as instrumental (i.e. information and practical support) and emotional support. Two effects of support on well-being have been postulated: a main effect and a stress-buffering model. The main effect model proposes that support has a direct impact on well-being since it provides a positive effect and stability in one's life. The buffering effect proposes that support is related to psychological symptoms only for people experiencing stress (Cohen & Wills, 1985) and that it intervenes between the stressful event and the psychological impact. A considerable body of evidence has demonstrated that social support moderates or 'buffers' the effect of stressful life events, serving a stress reducing function (Pretorius & Diedricks, 1994). This theory exemplifies the biopsychosocial approach to health and illness; the social system is able to induce and/or reduce stress, affecting both psychological and physiological health.

The interaction between social support and other mediating variables is still the source of some debate in the literature. However, an association has been found and replicated, between problem-focused coping (likened earlier to a positive problem-solving style; approach problem solving) and the seeking of social support (Scheier, Weintraub, & Carver, 1986; Folkman & Lazarus, 1985; Stone & Neale, 1984). It is suggested that, as part of effectively dealing with the stressor, effective problem solvers (individuals utilising positive problem-solving styles) are able to evaluate the stressor and recognise social support as an additional coping option (Pretorius & Diedricks, 1994). However seeking social support can be defined as a coping style that is both problem focused and emotion focused; seeking social support for instrumental reasons is problem focused coping, whereas seeking social support for emotional reasons is emotion focused coping (Carver, Scheier, & Weintraub, 1989).

Similarly, positive associations have been found between optimism and the seeking of social support (Scheier, Weintraub & Carver, 1986). Indeed research suggests that optimists' superior adjustment to stressful life events may be due to their ability to attract greater social support than pessimists (Brissette, Carver, & Scheier, 2002). Although it seems commonsensical that those who have a greater range and/or quality of social support will fare better than those who do not, this relationship is unlikely to be a simple one; contingent on the individual's cognitive processes (Richards, 1994). Indeed, previous research has found the role of social support to be dependent, in some way, upon the type of stressor and contextual factors, such as duration of exposure (Lepore, Evans, & Schneider, 1991). In the context of high, intergenerational, family conflict, social support seeking has been found to be an effective strategy (Lee, Su, & Yoshida, 2005).

Recent research has shown the perceived social support of the immediate family (parents and siblings) to be one of the strongest positive influences upon psychosocial resilience, more so than perceived peer support (Tusaie, Puskar, & Sereika, 2007; Pinkerton & Dolan, 2007). These findings are in line with previous research on sibling support; whereby a person's perceptions of the quality of the sibling relationship and its support is directly, and positively, linked to subjective well being (Cicirelli, 1989).

However, few studies have examined the potential role of social support on the relationship between interparental conflict and divorce and offspring adjustment or distress. It is possible that social support plays a mediating role because of the impact that interparental conflict and divorce have on children's sources of support within the family. The negative effect of interparental conflict on parent-child relations (via the spillover of negativity from the marital to the parental role) and the effects of interparental conflict on other family members (such as siblings) removes a potentially important source of support from children; increasing the risk of adjustment problems (Shelton & Harold, 2007). Therefore collectively, interparental conflict and divorce may adversely affect offspring by impeding their ability to access sources of emotional and instrumental support.

6.2.5 Problem solving style

Problem-solving style has emerged in the literature as an important variable in the mediation of stress; it is the process by which individuals identify effective coping strategies (Cassidy & Long, 1996) and, as such, is deemed to be part of the appraisal process. The appraisal process is divided into two aspects: primary appraisal; whereby an evaluation is made as to whether or not a problem exists, and secondary appraisal; whereby the individual evaluates the resources available to them in resolving the problem. The outcome of this appraisal process is a coping response (Lazarus, 1993). Problem solving is part of the secondary appraisal process; identifying an effective coping response or strategy.

Nezu (1987) outlined five stages of the problem solving process and, together with D'Zurilla (D'Zurilla & Nezu, 1990) proposed the 'social problem solving model' which incorporates those stages. In the model, social problem solving is defined as the self directed cognitive-behavioural process by which an individual identifies ways of coping with problematic situations encountered (D'Zurilla, Maydeu-Olivares, & Kant, 1998). The term social problem solving is perhaps misleading; it is not meant to limit problem solving to specific problems, rather it is used to emphasize the focus on problems experienced in real life (the natural social environment). The social problem solving

process consists of two components; problem orientation, and problem solving skills. Problem orientation focuses on the generalized cognitive-behavioural response set that the individual brings to problematic situations; their appraisals, attributions, expectancies, and behavioural approach-avoidance tendencies. The problem solving skills component of the social problem solving process involves four goal directed tasks; problem definition, the generation of possible solutions, decision making, and finally solution implementation and evaluation.

Problem solving styles are yet to be consistently defined in the literature (Chang et al., 2007). Essentially, problem solving styles are the cognitive processes which lead to problem solving skills; the underlying way of thinking that an individual develops regarding problems. The general assumption is that positive problem-solving styles will lead to effective problem-solving skills (Cassidy, 1999), therefore reducing an individual's stress level. In the interparental conflict and divorce literature findings consistently suggest that problem solving does not protect against distress as a result of parental conflict or divorce (Shelton & Harold, 2007; Lee, Su, & Yoshida, 2005; Sandler, Tein, & West, 1994). However this research is actually measuring the effect of problem focused coping, a coping style rather than a problem solving style. An apparent relationship has been identified between problem solving styles and a range of other variables implicated in the stress process, such as achievement motivation, locus of control, and social support (Cassidy & Long, 1996).

6.2.6 Achievement motivation

Achievement motivation has been considered essential for well-being by a number of different researchers since James (1890) suggested achievement strivings were central to an individual's psychology. For example Murray (1938) argued achievement motivation to be one of the essentials in his theory of personality, and, more recently, Diener and colleagues (Diener, Suh, Lucas, & Smith, 1999) have successfully linked achievement strivings to subjective well-being in a programme of research spanning three decades. Studies by the aforementioned authors, and many others, support the notion that psychological health exists in striving for achievement. Findings from a

study by Cassidy (2000b) indicate that achievement motivation, along with optimism, mediates between home background and both psychological distress and self-rated health. Carr and Mednick (1988) found that non-traditional sex role training leads to higher levels of achievement motivation for girls, whereas traditional sex role training leads to higher achievement motivation levels for boys. Similarly Bal (1988) found that children of employed mothers had higher levels of achievement motivation than children of unemployed mothers. In a longitudinal study Cassidy and Lynn (1991) showed socioeconomic and family background to be predictive of both achievement motivation and academic achievement. From these studies it is reasonable to conclude that achievement motivation is affected by family background whilst simultaneously mediating the effects of family background upon subjective psychological health.

7 Thesis rationale and research questions

Interparental discord and divorce are both well established childhood risk factors and are therefore associated with multiple problematic outcomes among adult offspring. Whilst the research in this area has studied a wide variety of differing family situations, from early disharmony through to parental separation, divorce and post divorce conflict, essentially the research is concentrated on the breakdown of the parental relationship, whatever form that may take, and the effects of this breakdown upon the children's adjustment.

The literature reviewed in Chapter 3 highlights how research has shown consistent support for positive associations between interparental divorce and offspring's emotional problems; internalizing symptoms, and behavioural problems; externalizing behaviours. The range of maladjustment indicators also includes social problems; such as decreased social competence and increased conflict in romantic relationships, academic problems, and even problems with psychobiological functioning. Overall the existing evidence indicates that both parental divorce and parental discord predict a variety of problems for offspring throughout life.

Research reviewed in chapter 4 highlighted the effects of parental divorce on sibling relationships. The compensation hypothesis postulates that sibling relationships may remain positive or even improve following parental divorce in order to compensate for deficits experienced in other interpersonal relationships, such as the parent child relationship. Research supporting the compensation hypothesis revealed the possibility of sibling relationships moderating the negative impact of parental divorce.

Indeed, research findings suggest that sibling relationships may actually protect children from adverse life circumstances; sibling support has a protective effect for preadolescents in troubled families and sibling warmth may operate as a protective factor for children experiencing family transitions. Siblings are therefore considered to be an important source of support during times of stress; indeed the mere presence of siblings has been shown to have a stress buffering effect for economically

disadvantaged children. However relatively few studies address sibling support as a possible protective factor for offspring at risk following a major life event, such as parental divorce or separation, and therefore relatively little is known about the extent of influence this support may have upon adjustment and the psychosocial factors associated with stress.

Although previous research has acknowledged variations in sibling relationships as a function of sex, whilst research is beginning in this area, still very little is known about the significance of the sex constellation of sibling relationships upon associated individual outcomes, such as socio-emotional development and adjustment. Likewise little is known about how the sex composition of sibling relationships may alter the effects of parental divorce or separation on offspring adjustment and even less still is known about whether or not the sex of all the siblings in a family interact with an individual's own sex to affect the impact of parental divorce or separation.

The current research programme has two overall aims: Firstly to explore the impact of the sex constellation of siblings upon psychological distress, within a psychosocial model of stress. In addition this thesis aims to explore the role of sibling sex constellation in adjustment following parental separation. As the research programme is exploratory the research questions are necessarily broad in nature:

- 1) Does the sex constellation of siblings in a family have a direct impact on psychological distress in emerging adults?
- 2) Does the sex constellation of siblings in a family have an impact on the psychosocial factors related to stress?
- 3) Does the sex constellation of siblings in a family have an impact on perceptions of family environment?

4) Does the sex constellation of siblings in a family effect the impact of parental separation on adult psychological distress, the psychosocial factors related to stress, and perceptions of the family environment?

8 Study 1: Family structure and environment, psychosocial factors and distress in a student sample.

8.1 Abstract

This chapter describes the first of two studies conducted in order to provide insight into possible effects of sibling sex constellation (the combination of a participant's sex and that of their siblings) upon self reported distress, the family environment, and four psychosocial factors associated with the stress process; social support, locus of control, optimism, and pessimism. In addition, this study explored interactions between sibling sex constellation and parental relationship status (intact versus non-intact homes) upon the same variables. Findings were firstly that the sex constellation of siblings in a family has a significant effect on levels of psychological distress, the psychosocial correlates of distress, and the family environment, with female siblings having a positive effect and males siblings a negative effect. Secondly, it appears that the sex constellation of siblings in a family might mediate the impact of parental separation upon distress, social support and optimism, and moderate the effects of parental separation upon locus of control, pessimism, and the family environment, again with female siblings having a positive effect. These findings are then discussed in relation to previous research in the area, and areas of interest for further study are highlighted.

8.2 Introduction

The literature reviewed in chapter 3 revealed the consistent finding that parental divorce is a major life event that has negative consequences which affect psychosocial adjustment in offspring throughout the life span. It is clear that from the research discussed in chapters 4 and 5 that siblings provide one another with support, advice and assistance on how to deal with difficult family situations, such as parental conflict and divorce.

Research supporting the compensation hypothesis revealed the possibility of sibling relationships moderating the negative impact of parental divorce. The literature reviewed indicates that this is perhaps more likely to occur in female sibling dyads; male only sibling dyads have been observed and reported as being more troubled than those involving only girls. Close sibling relationships (those involving high levels of warmth and involvement) following parental divorce involve female siblings more often than male siblings. Accordingly, research reviewed in chapter 5 found that in adulthood people consider their relationships with sisters to be of particular importance. Whilst female siblings are no less negative or conflictual, they are more supportive and positive in their sibling relationships than are male siblings. As such, although the sex composition of sibling relationships has largely been ignored, the limited research suggests that relationships between sisters may be most protective against the negative effects of parental divorce. It should be noted that research in this area has always focused on one particular sibling relationship in each family; therefore the effect of the presence and sex of other siblings in the family has not been studied, neither has any interaction between an individual's sex, the sex of all of their siblings, and the impact of parental divorce upon that individual.

The aim of Study 1 was to explore the possible effects of sibling sex constellation on psychological distress and a number of psychosocial factors associated with distress (social support, locus of control, optimism, and pessimism). Furthermore this study aimed to explore whether sibling sex constellation affects psychological distress and the

same psychosocial factors related to distress, in adult participants following parental separation.

The research questions addressed in this study were as follows:

- 1) Does the sex constellation of siblings in a family have a direct impact on psychological distress in emerging adults?
- 2) Does the sex constellation of siblings in a family have an impact on the psychosocial factors related to stress?
- 3) Does the sex constellation of siblings in a family have an impact on perceptions of family environment?
- 4) Does the sex constellation of siblings in a family effect the impact of parental separation on adult psychological distress, the psychosocial factors related to stress, and perceptions of the family environment?

8.3 Method

8.3.1 Design

A cross sectional survey design was employed to explore the effect of the sex of siblings in intact and non-intact families, on family relations, social support, locus of control, optimism, pessimism, and psychological distress.

8.3.2 Participants

The sample consisted of 708 participants (294 males and 414 females), aged 17-36 years old with a mean age of 19.41 (SD= 2.47). Participants were selected from random groups of social science and humanities undergraduate students using opportunity sampling. In the sample there were 289 participants from intact families and 419 from non-intact families of origin. Of the participants 96 were singletons (only children), 208 had both brothers and sisters, 206 had brothers and no sisters, and 198 had sisters and no brothers.

8.3.3 Materials

8.3.3.1 Demographic data

A variety of demographic information was gathered from participants including age, sex, and number of siblings. Participants were also asked to provide the sex of each of their siblings. In order to determine whether their childhood home was intact or not participants were asked if their biological parents had remained together throughout their (the participant's) life span. If the answer was no, they were asked what age they were when their parents' separation occurred. Again, if the participant's parents had separated they were asked to indicate which parent they continued to live with following the separation, and the level of contact they had had with the absent (non - resident) parent. The level of contact was categorized as follows; more than once a week, once a week, once a fortnight, once a month, once a year or less, and never. In this study participants were only asked if parents were together or separated, and no

information was gathered about whether parents had ever been married or indeed if they were divorced. Hence the term separated will be used in the following studies to include both divorced parents and separated parents who were not married.

In addition participants were assessed on the following measures (see Appendix A):

8.3.3.2 *Family Environment.*

The Family Environment Scale (FES: Moos & Moos, 1986) is designed to assess interpersonal relationships among family members, directions of personal growth emphasized by the family, and the basic organizational structure of the family. The FES is one of the most commonly used assessment instruments in marital and family research (Piotrowski, 1999) and has thus been used with participants of all ages (e.g. Halpern, 2004; Davies, DiLillo, & Martinez, 2004; Buboltz, Johnson, & Woller, 2003). The FES is frequently used to retrospectively assess the social climate in an adult individual's family of origin (Negy & Snyder, 2006).

The Family Environment Scale consists of 62 items which measure 10 first order factors; family environment, cohesion, expressiveness, conflict, independence, achievement orientation, intellectual-cultural orientation, active-recreational orientation, moral-religious orientation, organisation and control. The 10 first order factors can be grouped into 3 second order factors: family relations, personal growth, and systems maintenance. The family relations factor consists of 3 dimensions; cohesion, expressiveness, and conflict. The cohesion subscale assesses the degree of commitment, help and support family members provide one another. The expressiveness subscale assesses the extent to which family members are encouraged to openly and directly express their feelings toward each other. The conflict subscale indicates the amount of openly expressed anger, aggression, and conflict among family members. The personal growth factor consists of 5 dimensions; independence, achievement orientation, intellectual-cultural orientation, active-recreational orientation, and moral-religious orientation. The independence subscale assesses the extent to which family members are assertive, self sufficient, and make their own decisions. The

achievement orientation subscale assesses the extent to which activities are cast in an achievement orientated or competitive framework. The intellectual-cultural orientation subscale assesses the level of interest in political, social, intellectual, and cultural activities. The active-recreational orientation subscale assesses the extent of participation in social and recreational activities. The moral-religious orientation subscale assesses the degree of emphasis on ethical and religious issues and values. The system maintenance factor consists of the remaining two dimensions; organization and control. The organization subscale measures the degree of importance placed on having clear organization and structure in planning family activities and responsibilities. The control subscale measures the extent to which set rules and procedures are used to govern family life.

For the purposes of this study participants responded to the FES regarding the families in which they grew up. Items were rated on a 3 point scale; false, sometimes true, and true. These responses were scored 0, 1, and 2 respectively; therefore higher scores indicate a higher level of the construct being measured by each subscale. The authors of the scale reported that all FES subscales possessed acceptable internal consistency (range .61 to .78 with a mean of .71), and eight week test retest reliabilities that ranged from .68 to .86 were reported for a large sample of 1067 families (Moos & Moos, 1981). In the current study, reliability coefficients (Cronbach's alpha) were as follows: cohesion (Alpha=.89), expressiveness (Alpha=.85), conflict (Alpha=.83), independence (Alpha=.81), achievement orientation (Alpha=.79), intellectual-cultural orientation (Alpha=.80), active-recreational orientation (Alpha=.78), moral-religious orientation (Alpha=.76), organisation (Alpha=.82), and control (Alpha=.83).

8.3.3.3 *Locus of Control*

Locus of control was assessed with the Locus of Control of Behaviour Scale (LCB; Craig, Franklin, & Andrews, 1984). The LCB scale was designed specifically to measure perception of control over personal behaviour and therefore to degree to which individuals perceive responsibility for their personal behaviour. It has been widely used in a number of different psychological fields; such as health psychology (e.g. Davis,

Hooke, & Page, 2006; Samaha, Lal, Samaha, & Wyndham, 2007) and organizational psychology (e.g. Bright, Prior, & Harpham, 2005). The scale consists of 17 items, rated on a 6 point bipolar likert-type scale. Scores for each item are then added to calculate a total score of perceived locus of control of behaviour. High scores are indicative of an internal locus of control, whereas low scores reflect externality. The LCB scale has been shown to be unrelated to either sex or age. The scale has a high reliability (.79 in a study of 100 students) and produces stable results over time; test retest reliability over 6 months in the absence of treatment was .73 (Craig et al., 1984). In the current study reliability (Cronbach's alpha) was .69.

8.3.3.4 *Optimism and Pessimism.*

The Life Orientation Test (LOT: Scheier & Carver, 1985) was used to assess both optimism and pessimism. The LOT is the most widely accepted measure of optimism and pessimism (Cameron & Ross, 2007) and was originally validated on college samples (Scheier, Carver, & Bridges, 1994) making it particularly relevant for the current study. The LOT consists of 4 positively worded items measuring optimism, 4 negatively worded items measuring pessimism, and 4 filler items. The factor analyzed LOT therefore has two subscales, each measuring a separate factor; optimism, and pessimism, and each 4 items. The optimism scale includes items such as 'I always look on the bright side of things' and the pessimism scale includes items such as 'if something can go wrong for me, it will.' The items on the LOT are rated on a 5-point fully anchored likert scale, ranging from 0 (strongly disagree) to 4 (strongly agree). For the purposes of the current study the two separate subscales were retained, providing two separate scores for optimism and pessimism, each ranging from 0 to 16. This treatment of the Life Orientation Test is consistent with recent literature (e.g. Peterson, 2000; Chang, Maydeu-Olivares, & D'Zurilla, 1997) and has been used in many recent studies (e.g. Nicholls, Polman, Levy, & Backhouse, 2008; Riolli, Savicki, & Cepani, 2002). Reliability coefficients in these studies respectively were .68 and .64 for optimism and .81, .60 for the pessimism subscale. In the current study, reliability coefficients (Cronbach's alpha) were .78 for optimism and .72 for pessimism.

8.3.3.5 *Social Support.*

The Cassidy and Burnside Social Support Scale was used to measure perceived social support (Cassidy & Burnside, 1996). It was decided to measure participants' perceived social support rather than the actual social support available to them as the literature indicates that perceived social support has a much stronger affect on adjustment than actual social support does (Widmer & Weiss, 2000). The Cassidy/Burnside Social Support Scale is a 12-item measure devised to give an overall indication of the level of perceived social support available to the individual. Example items are 'Is there someone who can make you feel good about yourself?' and 'Do you have someone to turn to in an emergency?' The scale is scored on a fully anchored three point likert scale (0=no, 1=possibly, 2=yes) giving a possible range of 0 – 24. A higher score indicates more perceived support available to the individual. Reported reliability coefficients for the scale demonstrate good reliability (Alpha=.91; Cassidy & Wright, 2008). In the current study, reliability (Cronbach's alpha) was .81.

8.3.3.6 *Psychological Distress.*

The 12 item General Health Questionnaire (GHQ-12: Goldberg, 1972, 1978) was used to assess psychological distress. The GHQ-12 is a widely used measure of psychological distress combining depression, anxiety and somatisation. Although initially developed to identify psychiatric disturbance of a non-psychotic nature in clinical samples it has also been shown to be a reliable and valid measure of distress in community samples (Goldberg et al, 1997). This measure was selected, as it is a brief, robust, self-report measure commonly used with community samples. It therefore enabled a general assessment of the psychological functioning of participants. A general approach to psychological assessment was thought appropriate given the limited literature on the contribution of siblings to mental health post parental divorce or separation.

Responses to the 12 items are made on a fully anchored four point scale. Participants are asked about their general health over "the past few weeks" and are instructed only to

think of “recent and present complaints”. An example of an item is “Have you recently lost much sleep over worry?” The responses for this item ranged from “not at all” to “much more than usual”. There are two ways to score the GHQ-12. Likert scoring assigns separate scores for each response category (0-1-2-3) providing a maximum total score of thirty-six. The GHQ method involves assigning scores of 0 and 1. The first two responses indicate the absence of a symptom and are assigned 0, while the second two answers indicate the presence of a symptom and are assigned 1. In the current study likert scoring was used resulting in a possible range of scores from 0 to 36. Cronbach’s alpha in the current study was .86.

8.3.4 Procedure

Opportunity sampling was used to obtain participants from groups of social science and humanities undergraduate students. All participants were assured of anonymity and confidentiality. Participation was voluntary and participants were provided with the researcher’s contact details, along with their unique participant number so they could withdraw their data should they change their mind regarding participation after data collection had taken place. Participants were told they could withdraw their data up to one month after participation. Once participants had consented they were given the questionnaires and asked to think of their family of origin and complete the forms provided. Instructions were provided for each scale, participants were also told they could consult the researcher if they did not understand either the process or any particular question on the questionnaire.

8.4 Results

8.4.1 Rationale for Analysis

The primary purpose of the current study was to test the hypothesised relationship between the sex constellation of siblings in intact and non-intact families, in terms of family environment, social support, perceived control, optimism, and psychological health.

8.4.2 Multivariate analysis of variance

The first stage of analysis used a Multivariate analysis of variance (Manova) with participant sex, intact versus non-intact homes, and number of siblings as the three independent variables and psychological distress, optimism, pessimism, perceived control, social support and the family environment dimensions of family relations, systems maintenance, and personal growth as the dependent variables. The means and standard deviations for this analysis are shown in Table 8.1.

Table 8.1: Means and standard deviations for dependent variables categorised by sex, family structure and sibling sex structure.								
	Sex		Family structure		Sibling structure			
Variable	Male N=294	Female N=414	Broken Home N=289	Intact home N=419	Only child N=96	Brother (s) N=206	Sister (s) N=198	Both N=208
	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)
Psychological Distress	14.6 (6.8)	13.9 (6.6)	13.9 (6.7)	14.5 (6.6)	12.9 (5.2)	17.4 (7.3)	11.4 (4.2)	14.4 (7.1)
Social support	6.6 (2.1)	7.5 (2.2)	7.3 (2.2)	6.9 (2.2)	7.4 (1.8)	5.9 (2.2)	8.3 (2.2)	6.9 (1.6)
Perceived control	5.2 (3.2)	4.7 (2.6)	5.5 (2.6)	4.5 (2.9)	3.8 (1.7)	4.3 (2.6)	5.4 (3.4)	5.5 (2.8)
Optimism	8.6 (2.9)	9.8 (3.4)	9.8 (3.0)	9.0 (3.4)	8.3 (1.5)	6.8 (2.0)	12.5 (2.9)	9.3 (2.6)
Pessimism	6.4 (3.0)	6.2 (3.1)	6.6 (3.0)	6.0 (3.0)	4.9(1.7)	7.6 (2.6)	5.3 (3.2)	6.5 (3.2)
Family relationship	9.4 (2.4)	9.4 (3.1)	9.0 (3.1)	9.7 (2.6)	9.3 (2.7)	8.9 (2.5)	10.1 (3.3)	9.2 (2.5)
Personal growth	9.0 (3.8)	10.7 (4.2)	8.9 (2.9)	10.7 (4.6)	11.8 (4.1)	8.7 (3.8)	10.6 (4.7)	9.9 (3.3)
Systems maintenance	9.2 (5.0)	10.9 (6.1)	8.6 (5.5)	11.4 (5.6)	11.5 (5.8)	9.5 (6.1)	11.2 (5.5)	9.4 (5.1)

There were main effects for participant sex on social support ($F(1,704) = 18.69$, $p < .001$), optimism ($F(1,704) = 14.48$, $p < .001$), personal growth ($F(1,704) = 20.33$, $p < .001$), and systems maintenance ($F(1,704) = 10.19$, $p < .001$). Females scored higher on social support, optimism, personal growth and systems maintenance than males (see Table 8.1).

There were main effects for intact versus non-intact homes on pessimism ($F(1,704) = 9.98$, $p < .001$), locus of control ($F(1,704) = 8.54$, $p < .01$), family relations ($F(1,704) = 4.78$, $p < .05$), personal growth ($F(1,704) = 42.33$, $p < .001$) and systems maintenance ($F(1,704) = 60.05$, $p < .001$). Participants from non-intact homes scored higher on social support, perceived control, optimism, and pessimism, but lower on family relations, personal growth and systems maintenance (see Table 8.1).

The variable 'sibling sex structure' had four levels, no siblings, brother only, sister only, and both brother(s) and sister(s). There were main effects for sibling sex structure on psychological distress ($F(3,704) = 34.47$, $p < .001$), optimism ($F(3,704) = 133.76$, $p < .001$), pessimism ($F(3,704) = 23.18$, $p < .001$), perceived control ($F(3,704) = 15.68$, $p < .001$), social support ($F(3,704) = 30.63$, $p < .001$), family relations ($F(3,704) = 8.28$, $p < .001$), systems maintenance ($F(3,704) = 6.78$, $p < .001$), and personal growth ($F(3,704) = 14.55$, $p < .001$). Post Hoc analysis (LSD) identified where the significant effects occurred. Singletons and those with both brother and sister were the only two categories that did not differ significantly from each other on psychological distress. All other categories differed significantly with regards to psychological distress; participants with sisters scored significantly lower than all other categories, and participants with brothers scored significantly higher than all other categories (see Table 8.1).

There were significant interactions between participant sex and intact/non-intact homes on psychological distress ($F(1,704) = 8.95$, $p < .01$), perceived control ($F(1,704) = 8.58$, $p < .01$), and personal growth ($F(1,704) = 21.21$, $p < .001$). On all three variables intact/non-intact homes reflect significant effects for males but not for females. Males

seem to have lower levels of distress, lower perceived control, and higher levels of family personal growth in non-intact homes.

There were significant interactions between participant sex and sibling sex structure on psychological distress ($F(1,704) = 3.94, p < .01$), optimism ($F(1,704) = 6.75, p < .001$), perceived control ($F(1,704) = 3.54, p < .01$), and family relations ($F(1,704) = 2.61, p < .05$).

There were significant interactions between sibling sex structure and intact/non-intact homes on psychological distress ($F(1,704) = 3.64, p < .01$), social support ($F(1,704) = 6.47, p < .001$), perceived control ($F(1,704) = 5.65, p < .001$), optimism ($F(1,704) = 11.75, p < .001$), pessimism ($F(1,704) = 5.41, p < .001$), family relations ($F(1,704) = 22.19, p < .001$), family personal growth ($F(1,704) = 3.65, p < .01$), and family systems maintenance ($F(1,704) = 5.76, p < .001$) (see Appendix B for illustrations of the significant effects from this analysis).

8.4.3 Calculating the Sibling Sex Constellation variable

In order to more fully explore the location of significant effects a participant sex by sibling sex structure variable was computed, the means for which are shown in Table 8.2. This sibling sex constellation variable had 8 levels; 1) male with no siblings (male singleton), 2) female with no siblings (female singleton), 3) male with brother only, 4) female with brother only, 5) male with sister only, 6) female with sister only, 7) male with both brother and sister, and 8) female with both brother and sister.

Table 8.2: Means and standard deviations for dependent variables categorised by sibling sex structure.

Variable	Female singleton N=49	Male singleton N=44	Female with sister N=128	Male with sister N=70	Female with brother N=104	Male with brother N=102	Female with both N=129	Male with both N=78
	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)
Psychological Distress	13.7 (5.7)	12.1 (4.4)	11.9 (4.0)	10.3 (4.5)	16.1 (7.8)	18.8 (6.7)	14.4 (7.3)	14.4 (6.9)
Social support	7.7 (2.2)	7.0 (1.2)	8.6 (2.3)	7.8 (2.3)	6.1 (2.1)	5.8 (2.2)	7.4 (1.5)	6.2 (1.4)
Perceived control	3.9 (1.8)	3.8 (1.6)	5.4 (3.1)	5.5 (3.9)	3.9(2.2)	4.5 (2.9)	4.9 (2.5)	6.4 (2.9)
Optimism	8.2(1.6)	8.4 (1.4)	13.1 (2.8)	11.6 (2.9)	6.9(2.1)	6.7 (2.0)	9.7 (2.7)	8.6 (2.3)
Pessimism	4.7 (1.9)	5.1 (1.6)	5.7 (3.5)	4.6 (2.5)	7.3 (2.6)	7.9 (2.5)	6.4 (3.1)	6.8 (3.5)
Family relationship	9.9 (2.6)	8.6 (2.7)	10.2 (3.9)	10.1 (1.7)	8.6 (3.0)	9.4 (1.7)	9.2 (1.9)	9.1 (3.2)
Personal growth	12.0 (4.1)	11.5 (4.2)	11.3 (4.8)	9.3 (4.1)	9.5 (3.9)	7.8 (3.6)	10.5 (3.5)	8.9 (2.7)
Systems maintenance	10.4 (5.2)	12.8 (6.3)	11.9 (6.1)	10.0 (4.2)	10.9 (6.9)	8.1 (4.8)	10.3 (5.5)	8.0 (4.2)

8.4.4 One Way Analysis of Variance for sibling sex constellation

One Way Analysis of Variance (Anova) was used to identify main effects on this variable. Main effects for sibling sex constellation were identified on psychological distress ($F(7,704) = 15.35, p < .001$), optimism ($F(7,704) = 82.36, p < .001$), pessimism ($F(7,704) = 10.24, p < .001$), perceived control ($F(7,704) = 8.12, p < .001$), social support ($F(7,704) = 24.73, p < .001$), family relations ($F(7,704) = 6.52, p < .001$), systems maintenance ($F(7,704) = 6.64, p < .001$), and personal growth ($F(7,704) = 11.66, p < .001$).

Post Hoc analysis (LSD) identified where the significant effects occurred. Males with a brother scored significantly higher than any other category on psychological distress. Males and females with a sister scored lowest on psychological distress. Males with a sister, females with a sister, and females with both scored significantly higher than other categories on optimism. The least optimistic participants were males and females with brothers. Participants of both sexes with brothers scored highest on pessimism, followed by participants of both sexes with both brothers and sisters. The lowest scores on social support were males with brothers and females with brothers. The highest scores on social support were females with sisters, males with sisters, and female singletons. Males with sisters, males with both brothers and sisters, and females with sisters had a significantly higher internal locus of control. Males with brothers, females with brothers, and singletons of both sexes had significantly higher external locus of control. Males with sisters, and females with sisters scored highest on family relationship, females with brothers, and male singletons scored lowest. Males with brothers, males with both brothers and sisters, and males with sisters scored lowest on personal growth. Male singletons and females with sisters scored the highest on systems maintenance.

8.4.5 Interaction effects with sibling sex constellation

A Multivariate analysis of variance (Manova) was used to test for interaction effects between sibling sex constellation (the variable computed for the previous analysis) and

intact/non-intact homes on all the other variables. There were significant interaction effects on psychological distress ($F(7,704) = 4.33, p < .001$), optimism ($F(7,704) = 6.63, p < .001$), pessimism ($F(7,704) = 3.14, p < .01$), social support ($F(7,704) = 4.59, p < .001$), perceived control ($F(7,704) = 4.49, p < .001$), family relations ($F(7,704) = 11.03, p < .001$), systems maintenance ($F(7,704) = 3.82, p < .001$), and personal growth ($F(7,704) = 6.08, p < .001$). The means and standard deviations for this analysis are shown in Table 8.3 and the effects are illustrated in Figures 8.1 – 8.8.

Figure 8.1: Interaction between intact/ non-intact homes and sibling sex constellation on Psychological Distress

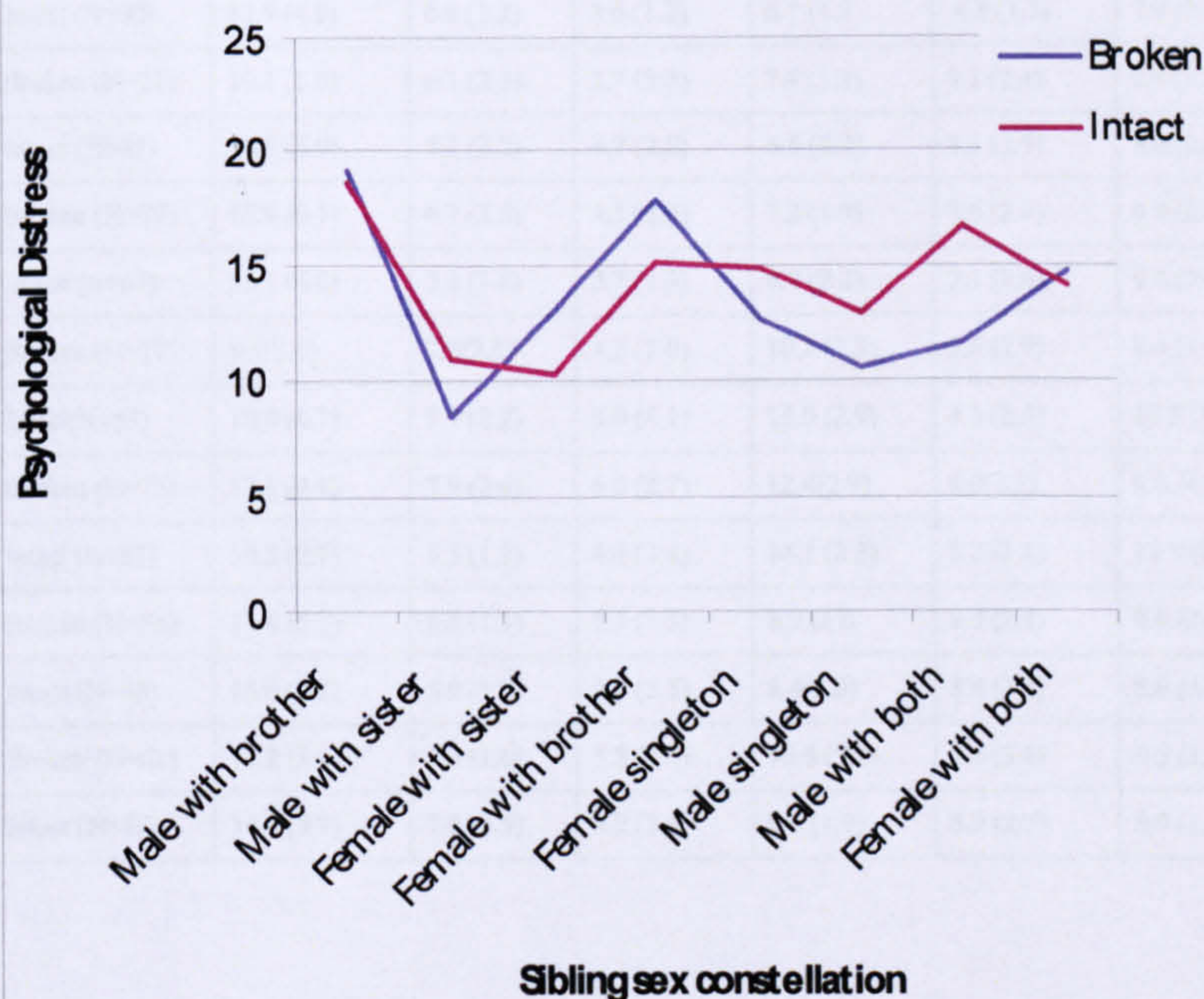


Table 8.3: Means and standard deviations for dependent variables categorised by sibling sex constellation, and intact / broken homes.

	Variables								
sibling sex constellation	Intact / Broken home	Psychological distress	Social support	Perceived control	Optimism	Pessimism	Family relations	Family Personal growth	Family Systems maintenance
Female singleton	Broken (N=27)	12.6 (4.1)	8.1 (2.2)	4.5 (1.9)	8.4 (1.3)	4.7 (1.7)	10.7 (2.4)	10.6 (3.8)	8.4 (4.3)
	Intact (N=25)	14.8 (6.9)	7.3 (2.2)	3.1 (1.3)	8.1 (1.9)	4.8 (2.1)	9.1 (2.5)	13.5 (3.8)	12.7 (5.2)
Male singleton	Broken (N=14)	10.6 (3.1)	7.3 (1.1)	4.1 (2.3)	7.8 (1.1)	5.5 (1.1)	10.3 (1.3)	10.9 (4.2)	7.8 (5.5)
	Intact (N=30)	12.9 (4.8)	6.9 (1.2)	3.6 (1.2)	8.7 (1.5)	4.9 (1.7)	7.9 (2.9)	11.8 (4.3)	15.1 (5.3)
Male with brother	Broken (N=21)	19.1 (5.0)	6.1 (2.3)	3.7 (3.3)	7.4 (1.2)	7.1 (2.4)	7.9 (3.0)	9.0 (1.0)	7.9 (3.8)
	Intact (N=81)	18.7 (6.9)	5.7 (2.2)	4.7 (2.8)	6.5 (2.2)	8.1 (2.5)	9.8 (0.8)	7.5 (3.9)	8.1 (5.0)
Female with brother	Broken (N=37)	17.9 (9.5)	6.7 (2.5)	4.5 (2.0)	7.2 (1.9)	7.6 (2.7)	6.9 (2.8)	7.7 (2.3)	7.7 (6.4)
	Intact (N=67)	15.1 (6.6)	5.8 (1.8)	3.7 (2.3)	6.7 (2.2)	7.1 (2.6)	9.5 (2.7)	10.6 (4.1)	12.7 (6.7)
Male with sister	Broken (N=17)	8.5(3.0)	7.3(2.5)	4.2 (3.0)	10.2 (2.3)	5.5 (2.9)	8.6 (1.5)	9.0 (2.8)	9.8 (6.1)
	Intact(N=53)	10.9 (4.7)	7.9 (2.2)	5.9 (4.1)	12.0 (2.9)	4.3 (2.4)	10.5 (1.5)	9.4 (4.5)	10.1 (3.5)
Female with sister	Broken (N=77)	13.1 (4.4)	7.9 (2.4)	6.0 (2.7)	12.4(2.9)	6.0(3.3)	9.0 (4.2)	9.3 (3.7)	11.3 (6.6)
	Intact (N=51)	10.2 (2.7)	9.5 (1.7)	4.4 (3.4)	14.1 (2.3)	5.2 (3.8)	11.9 (3.0)	14.2 (5.0)	12.8 (5.1)
Male with both	Broken (N=35)	11.6 (3.3)	6.6 (1.3)	7.7 (1.3)	8.9 (1.0)	8.5 (2.4)	9.8 (2.1)	7.4 (1.2)	4.8 (1.5)
	Intact (N=43)	16.6 (8.2)	5.9 (1.5)	5.4 (3.5)	8.4(3.0)	5.4 (3.6)	8.6 (3.8)	10.2 (3.0)	10.6 (3.8)
Female with both	Broken (N=61)	14.8 (8.8)	7.3 (1.6)	5.8 (2.4)	10.5 (3.2)	6.9 (3.4)	9.5 (1.9)	8.6 (1.7)	7.9 (4.1)
	Intact (N=69)	14.1 (5.7)	7.5 (1.5)	4.2 (2.4)	8.9 (1.9)	5.9 (2.7)	8.9 (1.9)	12.1 (3.8)	12.3 (5.8)

As can be seen in Table 8.3 the levels of psychological distress were consistently higher for participants from broken homes except for males with sisters, males with both brothers and sisters, and singletons for whom the reverse was true. The highest levels of psychological distress were observed in males with brothers from broken homes. Lowest levels of psychological distress were observed in males with a sister from broken homes, followed by females with a sister from intact homes. Perceived social support was higher for all participants whose parents had split up, except for males and females with sisters; whereby those in intact homes reported more social support. The highest scores were for females with sisters in intact families, followed by female singletons and females with sisters in broken homes. The highest scores for optimism were observed in females with sisters from intact homes and broken homes, and the highest scores for pessimism were observed in males with both brothers and sisters from broken homes.

The highest score on the family relationship dimension of the Family Environment Scale was for females with sisters in intact homes. For the systems maintenance dimension the highest scores were observed in male singletons and females with either sisters, brothers, or no siblings in intact homes. The lowest scores were observed in males with both brothers and sisters from broken homes, females with brothers from broken homes, and male singletons from broken homes. The lowest scores on the personal growth dimension were observed in males with both brothers and sisters from broken homes, and males with brothers from intact homes, and the highest scores were observed in females with sisters from intact homes.

Figure 8.2: Interaction between intact/ non-intact homes and sibling sex constellation on Social Support

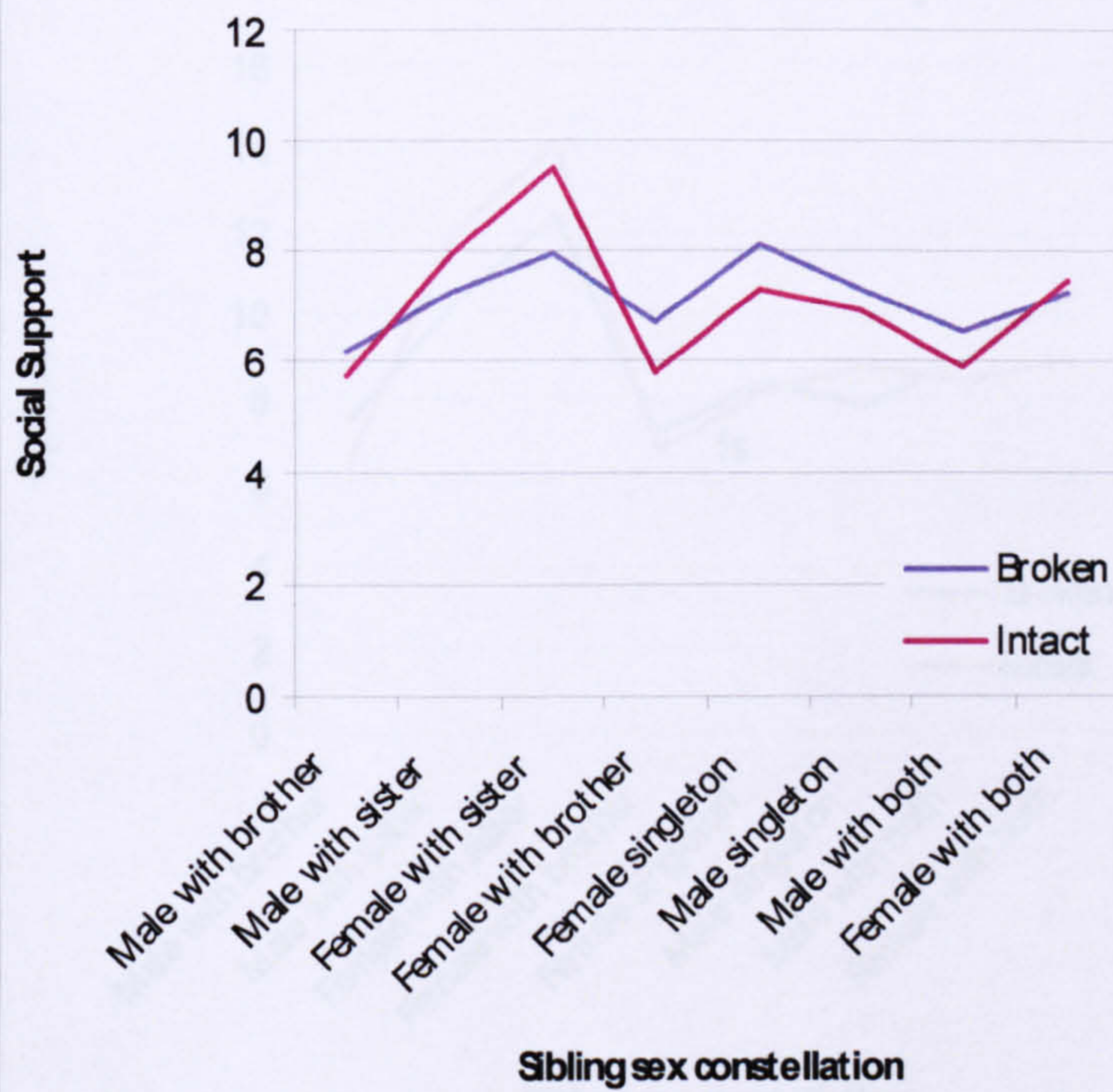


Figure 8.3: Interaction between intact/ non-intact homes and sibling sex constellation on Perceived Control

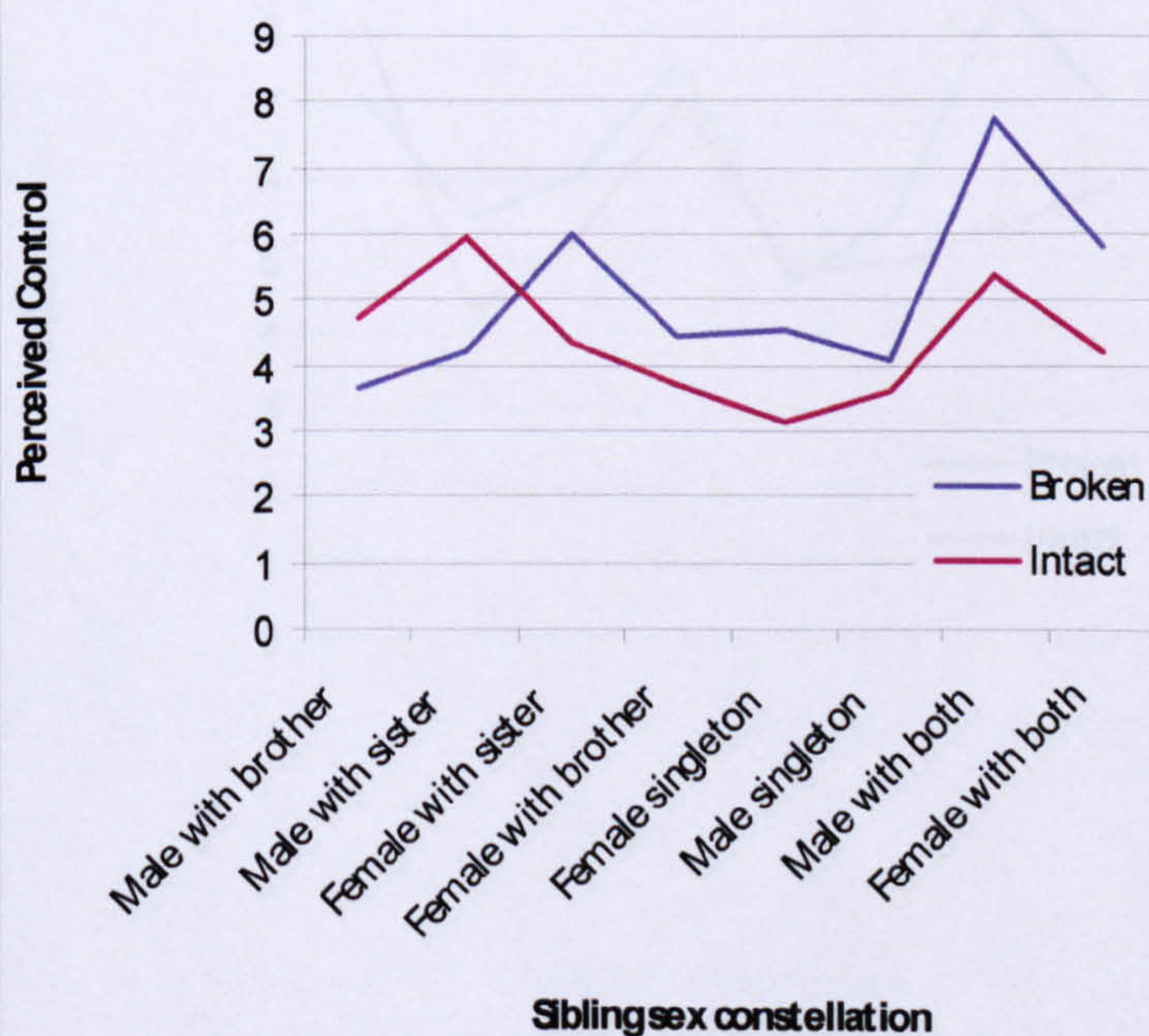


Figure 8.4: Interaction between intact/ non-intact homes and sibling sex constellation on Optimism



Figure 8.5: Interaction between intact/ non-intact homes and sibling sex constellation on Pessimism

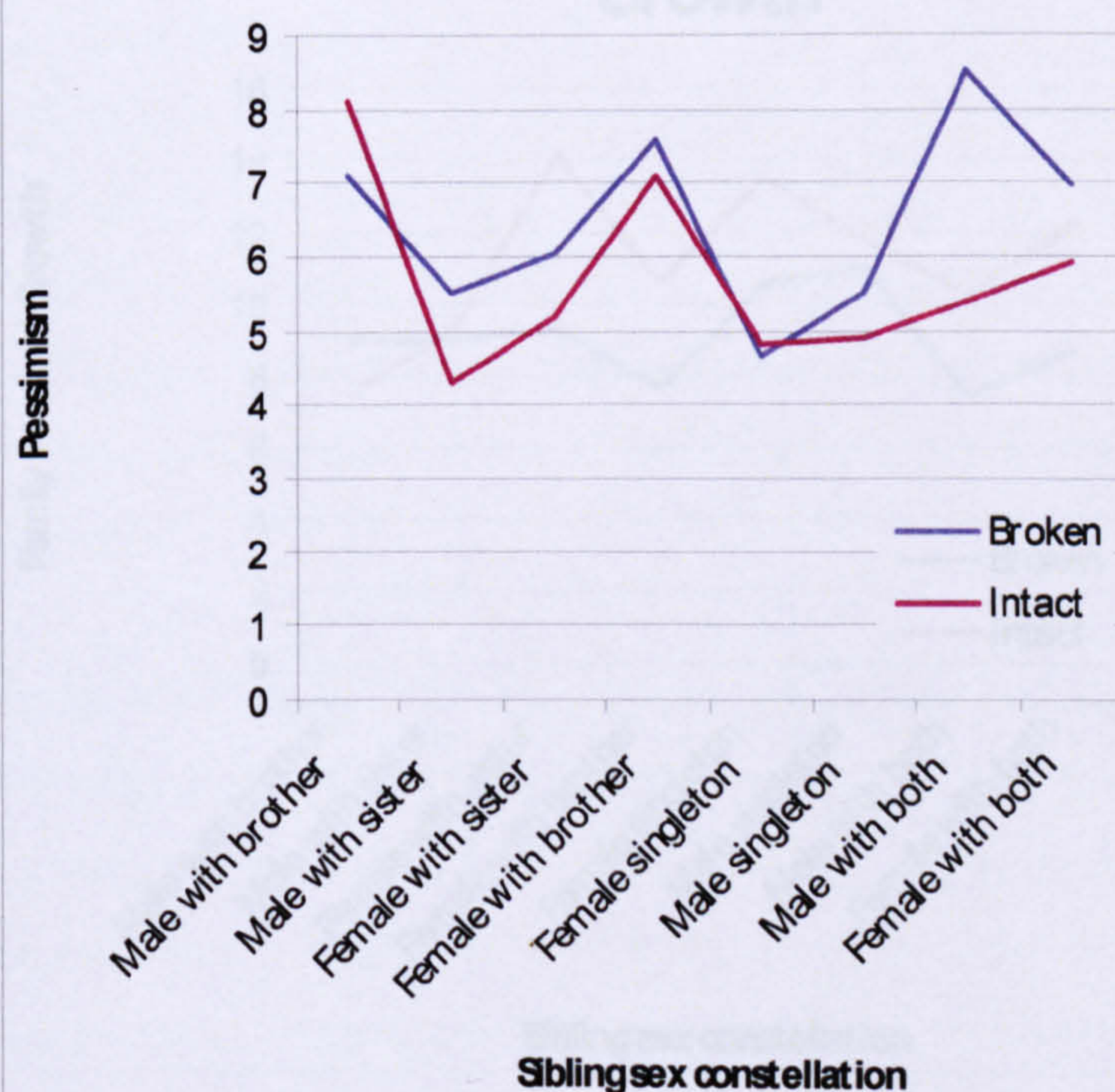


Figure 8.6: Interaction between intact/ non-intact homes and sibling sex constellation on Family Relations



Figure 8.7: Interaction between intact/ non-intact homes and sibling sex constellation on Family Personal Growth

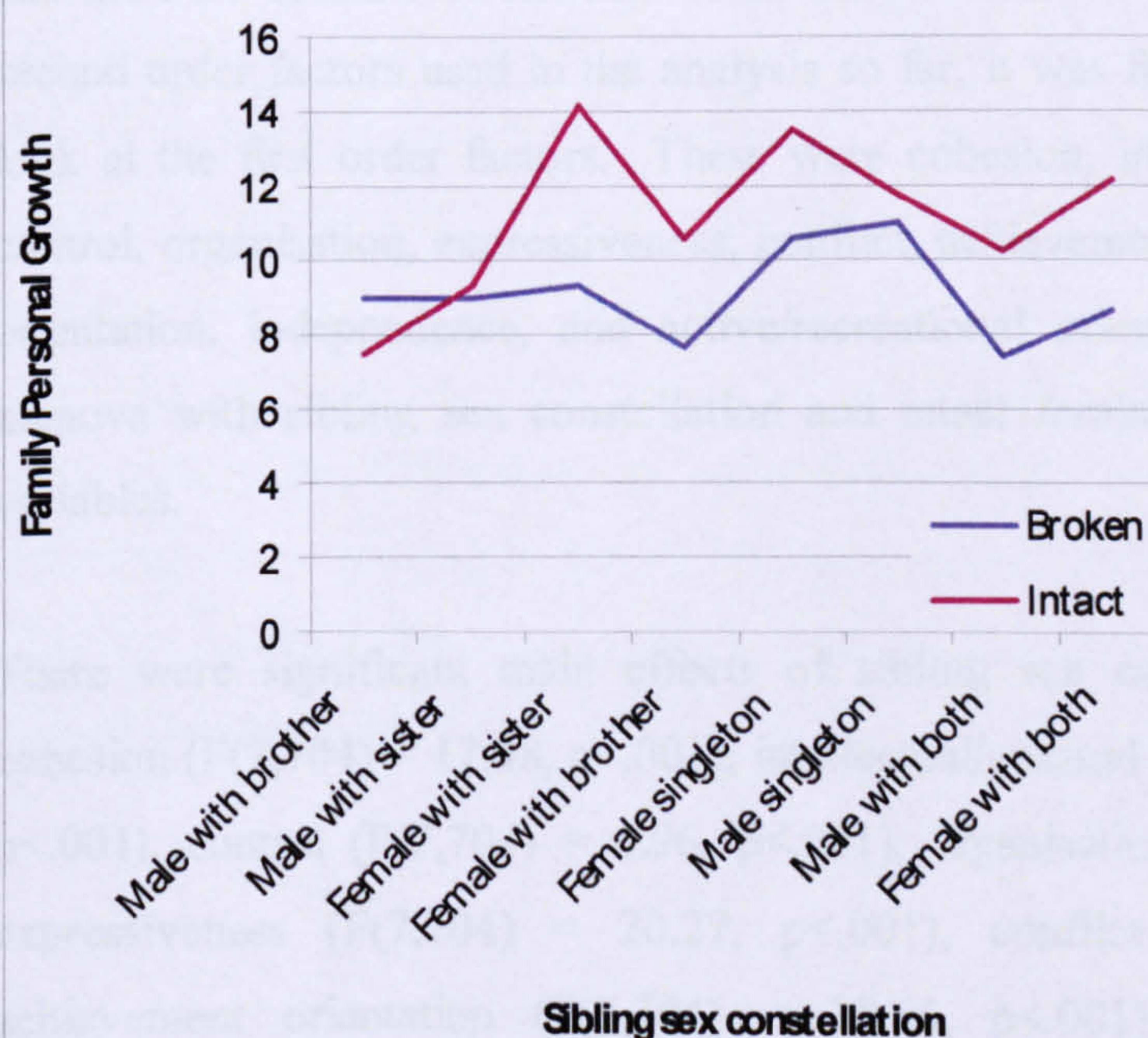
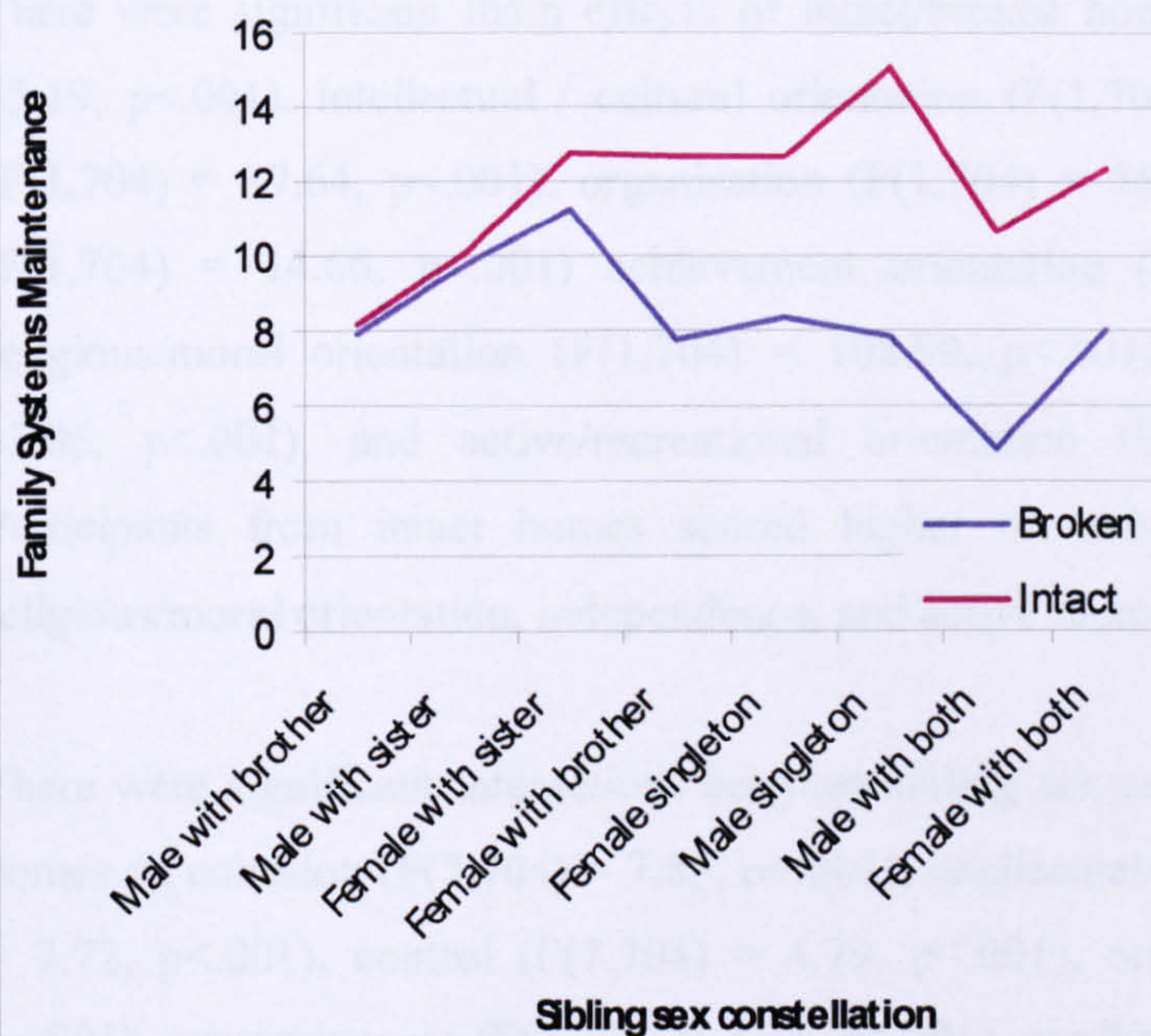


Figure 8.8: Interaction between intact/ non-intact homes and sibling sex constellation on Family Systems Maintenance



8.4.6 Using the FES first order factors

Because the impact of sibling sex structure on the family environment was a key focus and the FES consists of ten first order factors which then combine to form the three second order factors used in the analysis so far, it was felt appropriate at this stage to look at the first order factors. These were cohesion, intellectual/cultural orientation, control, organisation, expressiveness, conflict, achievement orientation, religious/moral orientation, independence, and active/recreational orientation. The analysis used manova with sibling sex constellation and intact /broken homes as the independent variables.

There were significant main effects of sibling sex constellation for all variables: cohesion ($F(7,704) = 17.98, p < .001$), intellectual/cultural orientation ($F(7,704) = 16.19, p < .001$), control ($F(7,704) = 4.96, p < .001$), organisation ($F(7,704) = 6.13, p < .001$), expressiveness ($F(7,704) = 20.27, p < .001$), conflict ($F(7,704) = 4.66, p < .01$), achievement orientation ($F(7,704) = 18.65, p < .001$), religious/moral orientation ($F(7,704) = 3.86, p < .001$), independence ($F(7,704) = 26.22, p < .001$), and

active/recreational orientation ($F(7,704) = 3.90, p < .001$). In line with the results for the second order FES factors both males and females with sisters score higher on cohesion, expressiveness, and achievement orientation, and lower on conflict. Females with sisters score highest on independence and active recreational orientation.

There were significant main effects of intact/broken homes on cohesion ($F(1,704) = 65.19, p < .001$), intellectual / cultural orientation ($F(1,704) = 22.54, p < .001$), control ($F(1,704) = 37.64, p < .001$), organisation ($F(1,704) = 55.85, p < .001$), expressiveness ($F(1,704) = 14.66, p < .001$) achievement orientation ($F(1,704) = 28.64, p < .001$), religious/moral orientation ($F(1,704) = 108.90, p < .001$), independence ($F(1,704) = 43.06, p < .001$), and active/recreational orientation ($F(1,704) = 59.37, p < .001$). Participants from intact homes scored higher on cohesion, control, organisation, religious/moral orientation, independence, and active recreational orientation.

There were significant interactions between sibling sex constellation and intact/broken homes on cohesion ($F(7,704) = 7.83, p < .001$), intellectual/cultural orientation ($F(7,704) = 7.72, p < .001$), control ($F(7,704) = 4.79, p < .001$), organisation ($F(7,704) = 2.79, p < .001$), expressiveness ($F(7,704) = 4.34, p < .001$), conflict ($F(7,704) = 16.54, p < .001$), achievement orientation ($F(7,704) = 8.31, p < .001$), religious/moral orientation ($F(7,704) = 4.49, p < .001$), independence ($F(7,704) = 6.67, p < .001$), and active/recreational orientation ($F(7,704) = 2.47, p < .01$) (see Appendix B for illustrations of the significant effects from this analysis).

The findings here are generally consistent with the findings for the second order factors of the FES but it is important to comment on the factors that make up the second order factor personal growth. The means for the factors making up this dimension are shown in Table 8.4. Males and females with sisters score equally high on achievement orientation and independence but do not score highest on religious/moral orientation, active recreational orientation, or intellectual/cultural orientation. Since these five first order factors are totalled to produce personal growth scores these differences probably mask the positive effect of having a sister on the personal growth dimension of the Family Environment Scale.

Table 8.4: Means and standard deviations for Personal Growth first order factors of the Family Environment Scale.

sibling sex constellation	Intact / Broken home	Achievement orientation	Religious / moral orientation	Independence	Active / recreational orientation	Intellectual / cultural orientation	Cohesion	Expressiveness	Conflict	Control	Organisation
Female singleton	Broken (N=27)	7.1 (1.5)	2.6 (2.4)	5.3 (2.4)	4.4 (4.3)	4.8 (2.3)	7.0 (2.5)	8.3 (3.1)	3.1 (2.1)	4.0 (3.4)	2.7 (2.5)
	Intact (N=25)	8.8 (2.8)	6.7 (4.3)	6.4 (1.3)	6.9 (2.3)	5.6 (2.0)	7.4 (2.4)	7.7 (2.8)	6.5 (4.1)	5.9 (3.1)	5.8 (2.8)
Male singleton	Broken (N=14)	5.1 (2.6)	5.4 (4.1)	5.9 (1.0)	4.0 (3.6)	3.7 (2.1)	6.3 (1.5)	4.1 (2.6)	3.6 (3.1)	4.3 (1.5)	3.0 (2.5)
	Intact (N=30)	8.0 (3.2)	4.9 (4.6)	5.1 (1.3)	7.5(2.1)	3.4 (1.9)	6.6 (2.5)	5.0 (2.8)	7.2 (2.7)	7.9 (2.3)	6.1 (3.2)
Male with brother	Broken (N=21)	7.2 (3.2)	1.6 (0.5)	2.2 (1.2)	3.8 (1.7)	2.9 (0.8)	4.5 (2.9)	2.4 (1.9)	8.5 (1.9)	3.2 (2.4)	4.1 (2.3)
	Intact (N=81)	4.3 (2.9)	5.6 (2.8)	4.8 (1.6)	4.4 (2.2)	3.1 (1.3)	5.1 (2.5)	4.9 (2.2)	4.4 (1.7)	3.5 (2.8)	4.2 (2.8)
Female with brother	Broken (N=37)	5.3 (2.8)	2.8 (2.1)	3.6 (1.5)	4.1 (2.3)	3.4 (1.6)	2.9 (1.8)	4.1 (1.8)	8.2 (2.3)	4.4 (3.2)	2.8 (1.9)
	Intact (N=67)	6.3 (3.2)	5.6 (3.7)	5.1 (2.2)	5.9 (3.0)	4.7 (2.5)	6.2 (2.4)	5.6 (3.2)	4.6 (3.5)	5.7(3.1)	6.1 (3.4)
Male with sister	Broken (N=17)	5.6 (2.7)	2.7 (3.7)	6.8 (2.6)	3.7 (0.5)	2.5 (1.2)	4.9 (2.0)	5.9 (1.2)	4.7 (2.0)	5.1 (2.8)	2.7 (1.3)
	Intact(N=53)	7.2 (2.5)	3.8 (3.3)	5.7 (2.2)	4.1(2.3)	2.7 (1.8)	7.4 (3.4)	5.8 (2.4)	4.4 (2.7)	4.4 (2.4)	3.9 (2.8)
Female with sister	Broken (N=77)	7.5 (2.6)	1.6 (2.2)	5.7 (2.2)	4.4 (1.8)	3.5 (1.4)	5.2 (3.1)	5.4 (3.4)	5.3 (4.5)	5.4 (3.9)	4.8 (2.8)
	Intact (N=51)	10.8 (3.3)	4.1 (3.1)	7.2 (2.8)	5.7 (2.4)	4.6 (1.8)	9.6 (2.9)	8.1 (3.8)	4.1 (3.5)	5.7 (2.9)	5.8 (2.9)
Male with both	Broken (N=35)	5.1 (1.3)	1.3 (1.1)	3.1 (1.6)	4.5 (0.8)	2.3 (1.3)	4.1 (1.9)	3.9 (2.3)	3.4 (2.1)	2.5 (0.7)	1.9 (1.0)
	Intact (N=43)	6.2 (2.0)	6.6 (3.4)	4.7 (1.2)	5.3 (2.9)	2.1 (1.3)	4.4 (3.2)	2.9 (3.2)	6.4 (2.7)	6.2 (2.0)	3.7 (2.1)
Female with both	Broken (N=61)	5.8 (2.5)	2.3 (2.2)	4.1 (1.4)	4.3 (2.5)	1.9 (1.5)	4.2 (2.2)	5.1 (2.9)	5.0 (3.2)	3.9 (2.4)	3.5 (2.7)
	Intact (N=69)	7.8 (3.5)	5.3 (3.7)	5.8 (1.6)	6.4 (2.7)	4.8 (2.4)	6.8 (2.2)	6.5 (2.7)	6.5 (3.7)	6.4 (3.3)	5.1 (2.7)

8.4.7 Multiple Regression Analysis

Part of the study aimed to test the relationship between sibling sex constellation, psychological distress, and the listed psychosocial variables. In order to do this Multiple Regression Analysis (MRA) was used with psychological distress as the first dependent variable. Because the analysis was exploratory the stepwise method of MRA was used. For sibling sex constellation to be used in MRA it first had to be recoded into a set of seven dummy variables representing the range of combinations across categories of the sibling sex constellation variable. There were 8 categories in this variable reflecting $N-1=7$ possible combinations based on female with sister as the base category. This was chosen since in much of the analysis presented above this seems to be the category that is positively indicated in terms of variables measured. The dummy variables were; 1) female with sister compared with female with brother, 2) female with sister compared with male with sister, 3) female with sister compared with male with brother, 4) female with sister compared with female singleton, 5) female with sister compared with male singleton, 6) female with sister compared with female with both brother and sister, and 7) female with sister compared with male with both brother and sister. The outcome of this MRA is shown in Table 8.5.

Optimism, social support, pessimism, family relations, female with sister compared with male with brother, female with sister compared with male with sister, and female with sister compared with male singleton were all direct predictors of psychological distress, accounting for 26% of the variance.

Optimism was then entered as the dependent variable in the next step of the MRA (Table 8.6) and was predicted by social support, pessimism, perceived control, sex, and female with sister compared with female with brother, female with sister compared with male with sister, female with sister compared with female singleton, female with sister compared with female with both brother and sister, and female with sister compared with male with brother, accounting for 53% of the variance.

On the next step of MRA (Table 8.7) social support was predicted by pessimism, family personal growth, family relations, intact/broken home, sex, female with sister compared with female with brother, female with sister compared with male with sister, female with sister compared with female singleton, and female with sister compared with female with both brother and sister, accounting for 29% of the variance.

Pessimism was predicted by perceived control, family personal growth, family systems maintenance and female with sister compared with male with sister, female with sister compared with female singleton, and female with sister compared with male singleton, accounting for 23% of the variance (Table 8.8).

Perceived control was predicted by family personal growth, family relations, family systems maintenance, female with sister compared with male with brother, female with sister compared with female with brother, female with sister compared with male with both brother and sister, and female with sister compared with female singleton, accounting for 50% of the variance (Table 8.9).

Family relations was predicted by family systems maintenance, family personal growth, intact/broken home, female with sister compared with female with brother, female with sister compared with male with both brother and sister, female with sister compared with female with both brother and sister, female with sister compared with male singleton, female with sister compared with male with brother, accounting for 19% of the variance (Table 8.10).

Although some of the variance accounted for was relatively small, it is clear that both sibling sex constellation and intact/broken homes are associated either directly or indirectly with psychological distress. In addition both were direct predictors of family relationships suggesting a possible mediating effect.

Table 8.5: The significant predictors of Distress from multiple regression analysis.							
Variable	Beta value	R2	R2 Change	F value	B(95% confidence limits for B)	Probability <	Dependent variable
Optimism	-.17	.10	.10	77.1	-.24(-.34 to -.13)	.001	Distress
Social support	-.17	.14	.04	54.7	-.53(-.76 to -.30)	.001	
Pessimism	.19	.17	.03	42.1	-.40(-.56 to -.25)	.001	
Family relations	-.19	.19	.02	32.4	-.44(-.62 to -.28)	.001	
Female with sister compared with male with brother	.19	.22	.03	33.9	3.54(2.20 to 4.87)	.001	
Female with sister compared with male with sister	-.14	.24	.02	31.5	-3.05(-4.55 to -1.55)	.001	
Female with sister compared with male singleton	.12	.26	.02	29.8	3.43(1.60 to 5.25)	.001	

Table 8.6: The significant predictors of Optimism from multiple regression analysis.							
Variable	Beta value	R2	R2 Change	F value	B(95% confidence limits for B)	Probability <	Dependent variable
Social support	.15	.18	.18	163.9	.34(.20 to .48)	.001	Optimism
Pessimism	-.15	.23	.05	107.0	-.25(.34 to .15)	.001	
Locus of control	.10	.26	.03	84.5	.18(.07 to .29)	.001	
Sex	.58	.29	.03	47.7	5.82(4.93 to 6.73)	.001	
Female with sister compared with female with brother	.55	.35	.06	54.4	7.70(6.72 to 8.68)	.001	
Female with sister compared with male with sister	.23	.40	.05	59.1	3.75(2.71 to 4.79)	.001	
Female with sister compared with female singleton	.36	.45	.05	64.5	6.89(5.74 to 8.04)	.001	
Female with sister compared with female with both	.34	.52	.07	75.4	4.37(3.51 to 5.23)	.001	
Female with sister compared with male with brother	.13	.53	.01	70.9	1.79(.84 to 2.74)	.001	

Table 8.7: The significant predictors of Social Support from multiple regression analysis.

Variable	Beta value	R2	R2 Change	F value	B(95% confidence limits for B)	Probability <	Dependent variable
Pessimism	-.09	.06	.06	46.5	-.06(-.11to -.01)	.01	Social support
Family Personal Growth	.25	.13	.07	52.0	.13(.09 to .17)	.001	
Family Relations	.19	.17	.04	50.5	.14(.09 to .19)	.001	
Broken home	-.10	.20	.03	44.9	-.42(-.73 to -.12)	.01	
Sex	.39	.22	.02	38.4	1.73(1.30 to 2.16)	.001	
Female with sister compared with female with brother	.29	.24	.02	37.5	1.77(1.27 to 2.28)	.001	
Female with sister compared with male with sister	.18	.27	.03	36.8	1.32(.81 to 1.83)	.001	
Female with sister compared with female singleton	.14	.28	.01	33.4	1.19(.58 to 1.80)	.001	
Female with sister compared with female with both	.16	.29	.01	31.8	.87(.41 to 1.33)	.001	

Table 8.8: The significant predictors of Pessimism from multiple regression analysis.							
Variable	Beta value	R2	R2 Change	F value	B(95% confidence limits for B)	Probability <	Dependent variable
Locus of control	-.12	.07	.01	28.1	-.13(-.22 to -.04)	.01	Pessimism
Family Personal Growth	-.31	.16	.09	44.3	-.23(-.30 to -.16)	.001	
Family Systems Maintenance	-.13	.17	.01	36.4	-.07(-.11 to -.03)	.01	
Female with sister compared with male with sister	-.21	.21	.04	30.1	-2.17(-2.95 to -1.40)	.001	
Female with sister compared with female singleton	-.12	.22	.01	27.8	-1.41(-2.23 to -.59)	.001	
Female with sister compared with male singleton	-.10	.23	.01	25.6	-1.31(-2.22 to -.39)	.01	

Table 8.9: The significant predictors of Control from multiple regression analysis.

Variable	Beta value	R2	R2 Change	F value	B(95% confidence limits for B)	Probability <	Dependent variable
Family Personal Growth	-.55	.29	.29	285.6	-.39(-.43 to -.34)	.001	Control
Family relations	.32	.41	.12	246.9	.33(.27 to .39)	.001	
Family Systems Maintenance	-.09	.42	.01	168.6	-.04(-.08 to -.01)	.01	
Female with sister compared with male with brother	-.21	.46	.04	117.2	-1.69(-2.18 to -1.21)	.001	
Female with sister compared with female with brother	-.14	.48	.02	106.2	-1.15(-1.61 to -.69)	.001	
Female with sister compared with male with both	.08	.49	.01	93.6	.75(.23 to 1.27)	.01	
Female with sister compared with female singleton	-.06	.50	.01	82.9	-.71(-1.34 to -.09)	.05	

Table 8.10: The significant predictors of Family Relations from multiple regression analysis.							
Variable	Beta value	R2	R2 Change	F value	B(95% confidence limits for B)	Probability <	Dependent variable
Family Systems Maintenance	-.44	.06	.06	41.2	-.22(-.26 to -.18)	.001	Family Relations
Family Personal Growth	.26	.12	.06	49.8	.18(.12 to .24)	.001	
Broken home	.18	.14	.02	39.8	1.04(.62 to 1.45)	.001	
Female with sister compared with female with brother	.18	.15	.01	32.1	1.43(.84 to 2.03)	.001	
Female with sister compared with male with both	.14	.16	.01	26.8	1.26(.60 to 1.93)	.001	
Female with sister compared with female with both	.14	.17	.01	23.4	1.01(.47 to 1.56)	.001	
Female with sister compared with male singleton	.12	.18	.01	21.2	1.34(.52 to 2.16)	.001	
Female with sister compared with male with brother	.13	.19	.01	19.9	1.00(.37 to 1.63)	.001	

8.5 Discussion

The main findings, that are the central focus of this thesis, are firstly, that the sex constellation of siblings in a family has a significant effect on levels of psychological distress, the psychosocial correlates of distress, and the family environment, as assessed in a sample of emerging adults. Secondly, although causality cannot be inferred because mediation and moderation were not specifically tested for, the sex constellation of siblings in a family served as a link between parental separation and distress in the absence of a direct relationship between the two variables. This association suggests that sibling sex constellation may mediate the relationship between parental separation and distress. The results also suggested that sibling sex constellation may serve to mediate the relationship between parental separation and both social support and optimism, and moderate the effects of parental separation upon locus of control, pessimism, and the family environment.

In the introduction to this study four exploratory research questions were outlined which the study aimed to address: 1) Does the sex constellation of siblings in a family have a direct impact on psychological distress in emerging adults? 2) Does the sex constellation of siblings in a family have an impact on the psychosocial factors related to stress? 3) Does the sex constellation of siblings in a family have an impact on perceptions of family environment? 4) Does the sex constellation of siblings in a family effect the impact of parental separation on adult psychological distress, the psychosocial factors related to stress, and perceptions of the family environment? The findings with regards to each of these research questions will now be discussed in turn.

8.5.1 Effects of sibling sex constellation on adjustment

The first research question concerned whether or not the sex of siblings in the family is related to psychological adjustment, in this case indexed by levels of psychological distress. The results showed a significant main effect of sex of siblings on psychological distress, demonstrating the presence of such a relationship. Participants with a brother reported the highest levels of psychological distress, while those with a

sister reported the lowest levels of distress. The finding that participants with a brother had higher distress levels than singletons is in direct opposition to Sandler's (1980) finding that the mere presence of any siblings had a stress buffering effect. However the protective effect of female siblings in this instance accords somewhat with previous research; the sex intensification hypothesis posits that females have greater psychological and emotional stakes in the family than males, leading to high levels of interpersonal concern in family relationships (Richmond and Stocker, 2007). It is possible that the concern that females have for their siblings provides the siblings with a level of support which serves to protect them from distress. The finding that participants with sisters had the highest levels of perceived social support would appear to support this theory. Therefore the very thing that increases females' risk of distress in situations of family conflict and separation; their greater psychological and emotional investment in the family, may serve to protect their siblings from distress, when the parents' relationship status is not taken into consideration.

When the sex of the participant and the sex of their siblings were combined in a sibling sex constellation variable, results showed a significant main effect for this variable on psychological distress. The combination of a male with a brother was related to the highest level of distress and was in fact significantly higher than any other participant and sibling sex combination. The lowest distress level was shown in males with a sister although this was closely followed, and did not differ significantly from, females with a sister. While this is cross-sectional data and therefore any explanation offered must be tentative, the effect of sex is quite clear. It would appear that the presence of brother(s) only is somehow related to increased distress, particularly for males, while the presence of sister(s) only relates to lower distress. These findings again suggest that females may serve as a protective factor for their siblings against psychological distress. The fact that males with brothers reported the highest levels of distress and males with sisters reported the lowest levels of distress highlights the influence of siblings upon distress levels for males. This is in direct opposition to Oliva and Arranz's (2005) assertion that males' sibling relationships are not related to their personal adjustment.

8.5.2 Effects of sibling sex constellation on psychosocial factors related to distress

In order to assess the mechanisms by which sibling sex constellation affects distress levels, the effect of sibling sex constellation upon known mediators and moderators of psychological distress was measured. The psychosocial variables included in this study (social support, locus of control, optimism, and pessimism) have been consistently identified in the literature as mediating or moderating psychological distress and therefore psychological adjustment (e.g. Tusaie, Puskar, & Sereika, 2007; Cassidy, 1999; 2000).

Although there were a number of effects of participant sex on the measured psychosocial variables; for example female participants reported higher levels of social support and optimism, and lower levels of perceived control and pessimism than the male participants, these sex differences were not particularly large (main effects were only found for sex on social support and optimism). However, when the number of siblings is taken into account the number of effects increases. Then when considering the interaction effects between sex of participant and the sex of their siblings the effects are wide ranging; there was a main effect for sibling sex constellation on all the psychosocial variables included in the study; social support, locus of control, optimism, and pessimism. The interactions between the participant and sibling sex combination, and each of the measured psychosocial factors will now be discussed in turn.

8.5.2.1 *Social support*

Female participants with a sister reported the highest levels of perceived social support. This is as may have been expected, given the combination of a female; hypothesised in the literature to place greater importance on interpersonal relations than males (i.e. Colarossi & Eccles, 2000; Geuzaine, Debry, & Liesens, 2000; Richmond & Stocker, 2007), and found in this study to have more perceived social support than males, with female siblings; postulated in the literature to be pro-social in their treatment of one another, and more positive than other combinations in supportive and emotional characteristics (Tucker, Barber, & Eccles, 1997). Appropriately, given the above finding, male participants with brothers reported the lowest levels of perceived social

support. This latter finding supports findings from previous research; whereby male same sex dyads are less pro-social than either female dyads or mixed sex dyads (Abramovitch, Pepler, & Corter, 1982). The reduction in perceived available support may be representative of the reduction in pro-social behaviour toward one another.

Interestingly singletons did not report the lowest levels of perceived social support. This is somewhat in opposition to previous research, which would suggest singletons may have lower levels of perceived social support, as children with siblings exhibit better social and interpersonal skills than singletons (Downey & Condon, 2004) and are therefore more likely to have close supportive relationships. However it is possible that the differences in social skills between singletons and those with siblings reduces with age; whilst studies that support the sibling effect have shown increased social sophistication in those with siblings (i.e. Ruffman, Perner, Naito, Parkin & Clements, 1998; Perner, Ruffman, & Leekham, 1994; Jenkins & Astington, 1996), these studies were all conducted with children and, it would appear from the current study, the findings do not apply to an emerging adult sample. However, it should also be noted that, as participants in the current study provided a self-report of the social support they perceived as being available to them, actual available social support and the quality of the available support was not measured.

8.5.2.2 *Locus of control*

Male participants with both brothers and sisters had the strongest internal locus of control, closely followed by male participants with sisters. A possible explanation for this is that males with siblings are socialized to feel responsible for or protective of their siblings, particularly sisters, increasing their perception of responsibility and resulting in a strong internal locus of control. Interestingly, the strongest external locus of control was found in male singletons, closely followed by female singletons and females with brothers. This finding indicates that it is not necessarily the sex of the participant that affects their locus of control (as male participants had both the strongest internal and external locus of control) but the combination of the participant's sex and the sex of

their siblings. The importance of this finding is evident in that the relationship between sibling sex constellation and individual locus of control has not been studied before.

8.5.2.3 Optimism

Female participants reported significantly higher levels of optimism than males. This finding is in contrast to the findings of previous literature; whereby males report more optimism and less pessimism than females (Extremera, Duran, & Rey, 2007; Nolen-Hoeksema, 2001). When the sex of the participants' siblings was also included the most optimistic participants were females with sisters and then males with sisters. Participants reporting the lowest levels of optimism were both male and female participants with brothers. These findings together appear to suggest that the presence of a female sibling actually increases optimism in some way for both sexes, whilst the presence of male siblings decreases optimism. Again, the relationship between these two variables (sibling sex constellation and optimism) has not been reported in the literature.

8.5.2.4 Pessimism

The pattern reported for optimism was repeated, although reversed, for pessimism. Male participants with brothers reported the highest levels of pessimism, simultaneously reporting the lowest levels of optimism. The least pessimistic, and also one of the most optimistic sibling sex combinations, was male participants with sisters. These findings suggest that the presence of a brother increases pessimism, whilst the presence of a sister decreases pessimism. This is further supported by the fact that participants, of both sexes, with both sisters and brothers report mid levels of both optimism and pessimism; in these cases it would appear that the positive effect of sisters upon life orientation and the negative effect of brothers upon life orientation serve to cancel one another out. The importance of replicating these findings is highlighted by their absence from the literature.

8.5.3 Effects of sibling sex constellation on perceptions of family environment

The findings discussed above show female siblings to be positively related to social support and control, both of which are not only well established mediators of distress, but also related to the family environment. This suggests that female siblings may exert a positive influence via differential interactions within the family.

Accordingly there were significant main effects of sibling sex constellation on all three second order factors of the Family Environment Scale. Both males and females with sisters reported the highest scores for family relations suggesting that the presence of female siblings, without the apparent negative influence of male siblings, is conducive to good, positive family relations. Though a causal relationship cannot be assumed this finding is in accordance with previous literature which suggested that female siblings tend to increase cohesion and decrease conflict in the family, whilst male siblings have the reverse effect (Weiss, Schitaffino, & Ilowite, 2001).

For the personal growth factor singletons actually reported the highest scores, followed by females in all constellations, and then by males in all constellations. This finding with regards to singletons is more understandable when the first order factors combined to create this second order factor are considered. For example, singletons might reasonably be expected to report higher levels of independence and active-recreational orientation than those with siblings. Interestingly, the same pattern was found for both males and females with siblings; participants with a sister reported more personal growth than participants with both sisters and brothers, who in turn reported more personal growth than participants with brothers only. Although this finding would seem to indicate that in the case of personal growth the optimum constellation is no siblings at all, for those participants with siblings the presence of sisters was related to more personal growth.

8.5.4 Effects of sibling sex constellation on impact of parental separation

Psychosocial factors that may mediate or moderate psychological distress and the family environment are clearly important at any given time but may have an added

importance during and following times of family crisis. Such a crisis occurs when parents separate and therefore a family breaks up. The final research question posed was whether the sex constellation of siblings in the family might moderate the impact of parental separation on later psychological distress, psychosocial factors related to stress, and perceptions of the family environment as an adult.

8.5.4.1 Effects of sibling sex constellation on psychological distress following parental separation

A surprising finding was that the relationship status of parents did not have a significant main effect on participants' distress levels. Indeed, although not significant, participants from intact homes reported higher levels of distress than participants from broken homes. This finding is in direct opposition to the literature in the area of parental separation and its implications for the adjustment of offspring (for example Amato, 2006; 2001). One possible explanation is that the resilience that Laumann-Billings and Emery (2000) found in college students with separated parents is being witnessed in this study, to a greater degree than previous research would suggest, as participants from broken homes actually reported less distress than their counterparts from intact homes. One of the factors influencing the psychological consequences of separation on children is the social context and the stigma traditionally associated with coming from a broken home. Interestingly as the prevalence of different forms of family increase this stigma may reduce. An interesting research question for the future would be whether the impact of separation and family break up is subject to a generational effect. In a social context where there are almost as many children from broken homes as there are from traditional families children may even wear their broken home status as a badge of honour. Research findings regarding adjustment in college students with separated parents have been remarkably inconsistent; thought to be because students with separated parents are better equipped for college life, therefore coping more effectively with college stressors than students from intact homes (McIntyre, Heron, McIntyre, Burton, & Engler, 2003). Findings from previous research are more consistent in non-student adult populations; therefore perhaps an adult sample

from the general population would produce distress findings more in line with expectations.

Although there was no main effect of parental marital status on distress levels, when the sex constellation of siblings was taken into account there was a significant interaction effect between the sex constellation of siblings, parental marital status, and psychological distress. These findings together suggest that the sex constellation of siblings may play a mediating role in the relationship between parental separation and offspring distress. Both the highest and lowest levels of psychological distress were reported by males in broken homes; the highest level of distress by males with brothers in broken homes, and the lowest level of distress by males with sisters from broken homes. This further demonstrates the strength of the positive effect of female siblings and the apparent negative effect of male siblings.

8.5.4.2 Effects of sibling sex constellation and parental separation on psychosocial factors associated with distress

Although parental relationship status had a significant main effect on locus of control and pessimism, there was no significant main effect of intact/non-intact homes on optimism or social support. However, sibling sex constellation did have a significant main effect on all four variables; social support, locus of control, optimism, and pessimism. Significant interaction effects between sibling sex constellation and parental relationship status were also found on all four psychosocial variables. Together, these findings suggest that sibling sex constellation might moderate the relationship between parental separation and both locus of control and pessimism, and possibly mediates the relationship between parental separation and both social support and optimism.

Literature in the area of parental divorce and its effects suggests that that offspring may perceive less time spent with their non custodial parent as a loss of support (Boyce Rodgers, & Rose, 2002). The absence of a main effect of parental status upon reported levels of social support, combined with an interaction between parental status and

sibling sex constellation upon social support levels, suggests sibling sex constellation plays a mediating role; with females participants, and participants of both sexes with female siblings reporting higher levels of social support. This suggests that female siblings may compensate for any loss of support while male siblings either fail to compensate or instead contaminate the sibling relationship, further reducing available support. The findings of the current study thus appear to support Hetherington's (1988), whereby any sibling relationship involving a male was more troubled, and female siblings were more likely to attempt to compensate for loss of parental attention following divorce. It is also possible that because of females' greater tendency to place importance on interpersonal relationships (Colarossi & Eccles, 2000), female siblings may encourage their siblings (either directly or via modelling processes) to build and maintain strong friendships, thus accounting for the positive effect of female siblings upon perceived social support for participants of both sexes.

8.5.4.3 Effects of sibling sex constellation and parental separation on the family environment

Parental relationship status (intact/non-intact homes) had a significant main effect upon all three second order factors of the Family Environment Scale; family relations, personal growth, and systems maintenance, as did sibling sex constellation. There were also significant interaction effects between sibling sex constellation and intact/non-intact homes on all three second order factors, suggesting that sibling sex constellation plays a moderating role, moderating the impact of parental separation upon the family environment.

The family relations factor was of particular interest due to previous research suggesting that females exert a positive influence by increasing cohesion and expressiveness, whilst simultaneously reducing conflict (i.e. Weiss, Schitaffino, & Ilowite, 2001; Cassidy & Newport, 1996); these three first order factor on the FES (cohesion, expressiveness, and conflict) are combined to produce the second order factor family relations. In the current study both males and females with sisters in intact homes reported the highest levels of positive family relations, whereas participants (of both

sexes) with brothers in broken homes reported the lowest levels of positive family relations. These findings support previous research and again point to the positive influence of sisters as compared to brothers, in this case with regards to family relations; specifically cohesion, expressiveness, and conflict.

When the ten first order factors of the Family Environment Scale were considered significant main effects were found of sibling sex constellation on all ten, and of intact/non-intact homes on all factors except for conflict, which was not significant. The fact that there were significant interaction effects between sibling sex constellation and intact/non-intact homes on all ten first order factors suggests that sibling sex constellation might moderate the relationship between parental relationship status and the family environment. However the factor of conflict was an exception, in this case it is possible that sibling sex constellation plays a mediating role; providing a mechanism through which parental relationship status effects conflict in the family environment.

8.5.5 The relative contribution of sibling sex constellation to psychological distress

Having used Manova analysis to provide evidence of a significant role for sibling sex constellation in psychological distress and the psychosocial concomitants of psychological distress, a slightly different focus on the data was taken in order to explore the relative contribution of sibling sex constellation to the prediction of psychological distress, and how this contribution is affected by psychosocial factors. The use of Multiple Regression Analysis (MRA) enabled the exploration of this relationship.

The female with a sister category contributed 7% to the 26% of the variance in psychological distress explained by direct predictors in this data. This was when females with sisters were dichotomously compared to males with brothers, males with sisters, and male singletons. This suggests that females who have a sister are likely to have lower levels of distress than male with brother, male with sister, and male singletons. The female with sister category also had an indirect impact on

psychological distress through optimism, social support, perceived control, pessimism and family relations. For example female with sister provided 24% of the variance in optimism explained in this data in comparison to female with brother, male with sister, female singleton, female with both, and male with brother. As optimism is a direct predictor of psychological distress, female with sister provided a further reduction in psychological distress by increasing optimism. In other words optimism might moderate the impact of female with sister on psychological distress in a positive direction. The female with sister category also added 7% to the variance explained in social support, 8% to perceived control, 6% to pessimism, and 5% to family relations. The findings of the MRA therefore suggest that for females the presence of a sister increases their optimism, their social support, their perceptions of control, and their family relations, and reduces their pessimism. The fact that family relations are predictive of social support and optimism provides a possible explanatory route. It would appear that the presence of a sister for females has a positive effect on family relations, in terms of increased cohesion and expressiveness and reduced conflict, and thus impacts upon distress levels and psychosocial factors associated with distress. Again, these findings are supported previous research which also found that female siblings increased cohesion and decreased conflict (Weiss et al., 2001).

8.6 Conclusion

The results showed a significant main effect for sibling sex constellation on psychological distress, with findings suggesting that females serve as a protective factor for their siblings against psychological distress. There were also main effects for sibling sex constellation on all the psychosocial variables included in the study (social support, locus of control, optimism, and pessimism), on all three second order factors of the Family Environment Scale, and all ten first order factors, again with female siblings serving a protective (positive) function. The importance of these findings is highlighted by the fact that they have not been studied before, and therefore have no existing presence in the literature.

The findings from this study suggested that the sex constellation of siblings may possibly play a mediating role in the relationship between parental separation and offspring distress, and parental separation and both social support and optimism. Sibling sex constellation may also serve to moderate the effects of parental separation upon locus of control, pessimism, and the family environment. All of the findings demonstrate the positive effect of female siblings and the apparent negative effect of male siblings.

The current study has effectively demonstrated the effects of sibling sex constellation and parental relationship status on psychological distress and a number of psychosocial correlates of distress. Some of these effects go beyond what has been previously reported hence it is important to see if they can be replicated in another sample. The current sample was taken from a student population and it is now useful to establish if the findings can be generalised to a more random general population sample. In addition the current study has indicated some future directions, particularly in terms of achievement motivation and coping. The effects on the achievement orientation dimension of the family environment raise the question as to whether sibling sex might impact on adult achievement strivings. Achievement motivation is an important indicator of work and career development but is also strongly linked to psychological well-being / distress potentially through the elements of hope or optimism which are

core aspects of striving towards goals (Cassidy, 1999). The impact of sibling sex on psychosocial correlates of psychological distress (support, control and optimism) raises the question of potential impact on coping. Coping is generally viewed as a two-part process involving appraisal and response (Lazarus, 1993) which are reflected in problem-solving style (appraisal), and coping style (response). As such, study two will aim to replicate the findings of the current study in a non-student adult sample, with the addition of measurements of achievement motivation; discussed in the literature review as an important psychosocial factor related to stress, problem solving style, and coping style; both important aspects of the coping process.

9 Study 2: Family structure and environment, psychosocial factors, coping, and psychological distress in a general population sample.

9.1 Abstract

This chapter describes the second of the two studies conducted in order to provide insight into possible effects of sibling sex constellation (the combination of a participant's sex and that of their siblings) upon 1) self reported distress, 2) the family environment, 3) five psychosocial factors associated with the stress process; social support, locus of control, optimism, pessimism, and achievement motivation, and 4) two aspects of the coping process; problem solving style and coping styles. In addition, this study explored interactions between sibling sex constellation and parental relationship status (intact versus non-intact homes) upon the same variables. Findings were that the sex constellation of siblings in a family has a significant main effect on levels of psychological distress, the psychosocial correlates of distress, the family environment, and the two aspects of the coping process, all with female siblings having a positive effect and males siblings an apparent negative effect. The hypothesis that the sex constellation of siblings would moderate the impact of parental separation upon distress, given the use of an adult non-student sample, was supported. The sex constellation of siblings was also found to moderate the impact of parental separation upon achievement motivation, family relations, systems maintenance, problem solving style, rational coping, and avoidance coping, and was found to influence the relationship between parental separation and social support, locus of control, optimism, personal growth, and emotion coping. These findings are then discussed in relation to previous research in the area.

9.2 Introduction

The results from study one show that psychosocial factors such as social support and locus of control are involved in the stress process; mediating and moderating the effect upon adjustment of major life events such as parental separation respectively. As the sex constellation of siblings has a main effect upon these psychosocial factors it is reasonable to conclude that the sex constellation of siblings may also have an effect on other aspects of the coping process. For example achievement orientation in the family environment was affected by sibling sex constellation, in both intact and non intact homes. Therefore it could be expected to impact upon individual adult levels of achievement motivation, a cognitive variable already cited as a mediator in the stress process (i.e. Cassidy, 1999; Diener, Suh, Lucas, & Smith, 1999). Likewise, as sibling sex constellation has a clear effect on psychosocial variables within the stress process, it is possible it also affects problem solving style (the process by which individuals identify effective coping processes), and coping style (the coping responses favoured by individuals), both well established aspects of the coping process.

Research findings regarding parental separation and distress have been inconsistent in college student samples (i.e. Laumann-Billings & Emery, 2000; Weiner, Harlow, Adams, & Grebstein, 1995). This is thought to be due to college students' resilience; whereby characteristics developed as a result of living in a broken home (such as freedom from peer enmeshment and high social responsibility) serve as assets, better enabling them to cope with college life than their peers from intact homes (McIntyre, Heron, McIntyre, Burton, & Engler, 2003). Consistent with this theory, the findings from study one (conducted with a student sample) failed to show a main effect of parental separation upon student distress levels; the relationship was instead mediated by sibling sex constellation. Findings reported in the literature are considerably more consistent for adult non-student samples; there is an association between parental divorce (at any age) and psychological maladjustment or distress as an adult (i.e. Maier & Lachman, 2000; Cherlin, Chase-Lansdale, & McRae, 1998). The current study utilizes a non-student adult sample in order to assess the role of sibling sex constellation in the parental separation and distress relationship.

The first aim of this study was to establish both the relationship between parental relationship status (intact versus non-intact home) and levels of distress in a non-student adult sample, and the interactions between parental relationship status and sibling sex constellation on distress levels. Due to the use of a non-student, adult sample in the current study, it was hypothesized that parental relationship status would have a main effect upon distress, and as a result sibling sex constellation would serve as a moderator rather than a mediator in the relationship between intact/non-intact homes and distress. It was hypothesized that female siblings' presence would again be a protective factor against distress following parental separation.

The second aim of this study was to replicate the Study 1 with regards to the effects of sibling sex constellation on both the measured psychosocial variables associated with the stress process (social support, locus of control, optimism, and pessimism) and the family environment. In addition to the above variables this study aimed to explore the effects of sibling sex constellation on achievement motivation, problem solving style, and coping styles.

The third aim was to explore interactions between parental marital status (intact versus non-intact home) and sibling sex constellation on the following: 1) psychosocial variables associated with the stress process; social support, locus of control, optimism, pessimism, and achievement motivation; 2) the family environment, and 3) aspects of the coping process; problem solving style and coping style.

9.3 Method

9.3.1 Design

A cross sectional survey design was employed to explore the effect of the sex of siblings in intact and non-intact families, on family environment, social support, locus of control, optimism, pessimism, achievement motivation, problem solving style, coping style, and psychological distress.

9.3.2 Participants

The sample was 574 participants (251 males and 323 females), aged 17–25 years old with a mean age of 20.41 ($SD = 2.12$). In the sample 112 were singletons (only children), 163 had only brothers, 171 had only sisters, and 128 had both brothers and sisters, 392 participants were from intact homes while 182 participants were from non-intact home backgrounds.

9.3.3 Materials

9.3.3.1 *Demographic data*

As in Study 1 a variety of demographic information was gathered from participants; their age, sex, number of siblings, and the sex of each of their siblings. Participants were also asked to state whether or not their childhood home remained intact. Again, if the participant's parents had separated they were asked to indicate which parent they continued to live with following the separation, and the level of contact they had had with the absent (non-resident) parent. The level of contact was categorized as follows; more than once a week, once a week, once a fortnight, once a month, once a year or less, and never. In this study participants were only asked if parents were together or separated, and no information was gathered about whether parents had ever been married or indeed if they were divorced. Hence the term separated will again be used to include divorced parents.

In addition participants were assessed on the following measures (see Appendix C):

9.3.3.2 *Family Environment.*

As in Study 1 the Family Environment Scale (FES: Moos & Moos, 1986) was used to assess the relations and ways of functioning within the family. This is a 62 item scale which measures ten first order factors of family environment; cohesion, expressiveness, conflict, independence, achievement orientation, intellectual-cultural orientation, active-recreational orientation, moral-religious orientation, organisation and control. The scales are scored so that a higher score indicates more experience of the specific factor within the family. The ten first order factors can be grouped into three second order factors: family relations (cohesion, expressiveness, and conflict); personal growth (independence, achievement orientation, intellectual-cultural orientation, active-recreational orientation, and moral-religious orientation); and systems maintenance (organisation and control).

For the purposes of this study participants responded to the FES regarding the families in which they grew up. Items were rated on a three point scale; false, sometimes true, and true. These responses were scored 0, 1, and 2 respectively; therefore higher scores indicate a higher level of the construct being measured by each subscale. The authors of the scale reported that all FES subscales possessed acceptable internal consistency (range .61 to .78 with a mean of .71), and eight week test retest reliabilities that ranged from .68 to .86 were reported for a large sample of 1067 families (Moos & Moos, 1981). In the current study, reliability coefficients (Cronbach's alpha) were as follows: cohesion (Alpha=.86), expressiveness (Alpha=.82), conflict (Alpha=.87), independence (Alpha=.84), achievement orientation (Alpha=.89), intellectual-cultural orientation (Alpha=.80), active-recreational orientation (Alpha=.83), moral-religious orientation (Alpha=.81), organisation (Alpha=.92), and control (Alpha=.90).

9.3.3.3 Social Support

As in Study 1, the Cassidy and Burnside Social Support Scale was used to measure perceived social support (Cassidy & Burnside, 1996). This is a 12-item measure devised to give an overall indication of the level of perceived social support available to the individual. The scale is scored on a fully anchored three point likert scale (0=no, 1=possibly, 2=yes) giving a possible range of 0 – 24. A higher score indicates more perceived support available to the individual. Reported reliability coefficients for the scale demonstrate good reliability (Alpha=.91; Cassidy & Wright, 2008). In the current study, reliability (Cronbach's alpha) was .89.

9.3.3.4 Locus of Control

As in Study 1 locus of control was assessed with the Locus of Control of Behaviour Scale (LCB: Craig, Franklin, & Andrews, 1984). The LCB scale was designed specifically to measure perception of control over personal behaviour and therefore to degree to which individuals perceive responsibility for their personal behaviour. The scale consists of seventeen items, rated on a 6-point likert-type scale. Scores for each item are then added to calculate a total score of perceived locus of control of behaviour. High scores are indicative of an internal locus of control, whereas low scores reflect externality. The LCB scale has been shown to be unrelated to either sex or age. The scale has a high reliability (.79 in a study of 100 students) and produces stable results over time; test retest reliability over 6 months in the absence of treatment was .73 (Craig et al., 1984). In the current study reliability (Cronbach's alpha) was .84.

9.3.3.5 Optimism and Pessimism

As in Study 1 the Life Orientation Test (LOT: Scheier & Carver, 1985) was used to assess both optimism and pessimism. This was due to the LOT being the most widely accepted measure of optimism and pessimism (Cameron & Ross, 2007). The LOT consists of four positively worded items measuring optimism, four negatively worded items measuring pessimism, and four filler items. The factor analyzed LOT therefore has two subscales, each measuring a separate factor; optimism, and pessimism, and each

four items. The optimism scale includes items such as ‘I always look on the bright side of things’ and the pessimism scale includes items such as ‘if something can go wrong for me, it will.’ The items on the LOT are rated on a 5-point fully anchored likert scale, ranging from 0 (strongly disagree) to 4 (strongly agree). For the purposes of the current study, as in the last, the two separate subscales were retained, providing two separate scores for optimism and pessimism, each ranging from 0 to 16. This treatment of the Life Orientation Test is consistent with the literature (e.g. Peterson, 2000; Chang, Maydeu-Olivares, & D’Zurilla, 1997) and has been used in many recent studies (e.g. Nicholls, Polman, Levy, & Backhouse, 2008; Riolli, Savicki, & Cepani, 2002). Reliability coefficients in these studies respectively were .68 and .64 for optimism and .81, .60 for the pessimism subscale. In the current study, reliability coefficients (Cronbach’s alpha) were .79 for optimism and .73 for pessimism.

9.3.3.6 *Achievement motivation.*

The Cassidy-Lynn Achievement Motivation Questionnaire (AMQ; Cassidy & Lynn, 1989) was used to measure achievement motivation. The AMQ has been used in a number of studies (i.e. Hart, Stasson, Mahoney, & Story, 2007; Rundle-Gardiner & Carr, 2005; Cassidy & Wright, 2008). This questionnaire, originally derived from the Lynn questionnaire (Lynn, 1969), is a 49 item scale which consists of seven subscales (each with seven items), each measuring a different factor of achievement motivation.

The seven achievement motivation factors measured in the AMQ are: 1) Work ethic; the desire to work hard finding reinforcement in the performance itself, 2) Acquisitiveness; motivation based on the reinforcing properties of material reward, 3) Dominance; the desire to lead or be in a position of dominance, 4) Pursuit of excellence; motivation that finds reward in performing to the best of one’s ability, 5) Competitiveness; the enjoyment of competition with others with the ultimate goal of winning, 6) Status aspiration; motivation reinforced by climbing the social status hierarchy, and 7) Mastery; reinforcing properties of succeeding in the face of difficulty. Reliability for each of the factors was reported by Cassidy and Lynn (1989) using a sample of university students, Reliability coefficients (Cronbach’s Alpha) were as follows: work

ethic (.79), acquisitiveness (.67), dominance (.81), excellence (.58), competitiveness (.71), status aspirations (.76), and mastery (.65). More recently Ward (1997) analysed the internal consistency of the AMQ with employed adults, finding similar levels of reliability; work ethic (.75), acquisitiveness (.71), dominance (.83), excellence (.75), competitiveness (.67), status aspirations (.73), and mastery (.59). Ward also reported the reliability coefficient for the scale overall, as a general measure of achievement motivation ($\text{Alpha}=.86$).

In the current study, using a 5-point likert scale (1=never to 5=always), respondents were asked to report the degree to which they think or behave in a specific manner (e.g. "I like to work hard"). Although the subscales are usually scored so that a higher score indicates more of that particular factor in the current study the Achievement Motivation Questionnaire was utilised to provide an overall score reflecting achievement motivation. This score was calculated by adding together all of the factor scores, and then dividing the total by seven (the number of factors) essentially providing a mean score. When used in this way higher scores indicate a stronger striving to achieve. The Cronbach's Alpha reliability coefficients for the current study were: work ethic (.81), acquisitiveness (.77), dominance (.75), excellence (.65), competitiveness (.74), status aspirations (.71), and mastery (.78).

9.3.3.7 Problem solving style.

Problem solving was assessed using the Problem-solving Style Inventory (PSI: Cassidy & Long, 1996). The scale has been used in a number of studies with both non-clinical (i.e. Baker, 2003) and clinical populations (Oscar, Serafin, & Ana, 1998), and across a number of age groups; adolescents (Cassidy & Taylor, 2005), emerging adults (Cassidy 2005; 2004), and older adults (Wright, Borril, Teers, & Cassidy, 2006), where it has been shown to be reliable and valid as well as practically useful.

The PSI is a 28 item scale which measures seven dimensions of problem-solving style: helplessness ($\text{Alpha}=.80$), control ($\text{Alpha}=.71$), confidence ($\text{Alpha}=.78$), creativity ($\text{Alpha}=.75$), approach style ($\text{Alpha}=.73$), avoidance style ($\text{Alpha}=.71$), and support-

seeking ($\text{Alpha}=.73$) (Cassidy & Taylor, 2005). However, the scale can also serve as a general indicator of positive or negative problem solving styles, whereby higher scores on the scale overall indicate a positive problem-solving style; where the person feels less helpless, more in control, more confident, more creative, more likely to approach and less likely to avoid problems. When used in this manner the PSI has an overall Cronbach's Alpha of .85 (Cassidy & Long, 1996). The scale is scored on a fully anchored three point likert scale (0=false, 1=sometimes true, 2=true) giving a possible range of 0 – 56.

9.3.3.8 Coping style.

The COPE scale (Carver, Scheier, & Weintraub, 1989) was used to assess common coping strategies generally used by participants when faced with difficult situations. The COPE is a widely used measure in a number of areas of psychological research, particularly in relation to stress and health (e.g. Maan Diong et al., 2005; Brissette, Scheier, & Carver, 2002; Chung, Berger, Jones, & Rudd, 2008) including following divorce (Zautra, Sheets, & Sandler, 1996).

For the purposes of this study the original version of the COPE was used with the exception of one of the subscales; alcohol and drug disengagement, which was not included. This left a 52 item inventory composed of thirteen subscales: 1) Active coping; the process of taking active steps to remove the stressor or to ameliorate its effects, 2) Planning; thinking about how to cope with the stressor, 3) Suppression of competing activities; avoiding becoming distracted by other events or projects, 4) Restraint coping; waiting until an appropriate opportunity presents itself, 5) Seeking instrumental social support; seeking advice assistance or information, 6) Seeking emotional social support; seeking moral support, sympathy and understanding, 7) Positive reinterpretation and growth; construing a stressful transaction in positive terms, 8) Acceptance; accepting the reality of the situation, 9) Turning to religion; the tendency to turn to religion in times of stress, 10) Focus on and venting of emotions; the tendency to focus on the distress and vent those feelings, 11) Denial; refusal to believe that the stressor exists or trying to act as though it is not real, 12) Behavioural disengagement;

reducing one's effort to deal with the stressor, perhaps even giving up the attempt to attain goals with which the stressor is interfering, and 13) Mental disengagement; a wide variety of activities that serve as a distraction from thoughts about the stressor or the goal with which the stressor is interfering.

Each of the COPE subscales is comprised of four items. Participants are asked to indicate to what extent they typically use each of the 52 described strategies to deal with stressful events. The use of coping strategies is reported on a 4-point likert scale anchored at 1, in which 1 indicates that the participant does not use a particular strategy and 4 indicates that they use that strategy a lot. This means that each subscale has a possible range of 12 (4-16). The COPE scale has shown acceptable internal consistency; Cronbach's alphas range from .45 (mental disengagement) to .92 (turning to religion) with a mean of .71, and test retest correlations show acceptable stability (Carver, Scheier, & Weintraub, 1989). Cronbach's alphas for the current study were as follows: Active coping (Alpha=.78), Planning (Alpha=.76), Suppression of competing activities (Alpha=.72), Restraint coping (Alpha=.68), Seeking instrumental social support (Alpha=.79), Seeking emotional social support (Alpha=.74), Positive reinterpretation and growth (Alpha=.81), Acceptance (Alpha=.86), Turning to religion (Alpha=.61), Focus on and venting of emotions (Alpha=.78), Denial (Alpha=.86), Behavioural disengagement (Alpha=.71), and Mental disengagement (Alpha=.77). Lyne and Roger (2000) carried out a psychometric reassessment of the COPE and concluded that the first order factor solution is unstable and the original factors do not always replicate. They recommended a 3 factor second order solution which produced three dimensions; 1) Rational coping (Alpha=.89), 2) Emotion coping (Alpha=.83), and 3) Avoidance (Alpha=.69). Some of the analysis for the current study uses these dimensions which, in this data, have reliability coefficients as follows: Rational coping (Alpha=.85), Emotion coping (Alpha=.87), and Avoidance (Alpha=.71).

9.3.3.9 *Psychological distress.*

The Brief Symptom Inventory (BSI: Derogatis & Melisaratos, 1983) was used as a measure of psychological distress. This is a 53 item scale is a short form version of the

extensively used Symptoms Checklist-90 (SCL-90). The BSI has been widely used in the area of stress and health (e.g. Sinha & Watson, 2007; Riolli, Savicki, & Cepani, 2002) and is considered to be a reliable measure of general distress in non-clinical populations.

Participants indicate the extent to which they are distressed by endorsing various psychological and physical symptoms experienced over the last seven days. The BSI uses a 5-point rating scale, ranging from 0 (not at all) to 4 (extremely severe). Nine primary symptom dimensions are measured: 1) Somatization; distress arising from perceptions of bodily dysfunction, 2) Obsessive-compulsive; thought, impulses and actions that are experienced as unrelenting, 3) Interpersonal sensitivity; feelings of inadequacy and inferiority compared to others, 4) Depression; dysphoria and lack of motivation and energy, 5) Anxiety; nervousness, apprehension, dread, and panic attacks, 6) Hostility; thoughts, feelings, or actions of anger, 7) Phobic anxiety; irrational fear of specific people, places, or situations, 8) Paranoid ideation; suspiciousness, grandiosity, fear of loss of autonomy, and 9) Psychoticism; withdrawn, isolated and alienated. The primary symptom dimensions can be further grouped into three global indices; the Global Severity Index, the Positive Symptom Total, and the Positive Symptom Distress index. Derogatis and Melisaratos (1983) reported reliability coefficients for the nine primary subscales ranging from .71 to .85 and test retest reliability ranging from .68 to .91. More recently cronbach's alphas have been reported as ranging from .70 to .86 (Sinha & Watson, 2007), thus demonstrating consistency. In the current study Cronbach Alphas were as follows: somatisation (Alpha=.92), obsessive-compulsive (Alpha=.94), interpersonal sensitivity (Alpha=.97), depression (Alpha=.89), anxiety (Alpha=.88), hostility (Alpha=.85), phobic anxiety (Alpha=.92), paranoid ideation (Alpha=.84), psychoticism (Alpha=.87), and suicide ideation (Alpha=.86).

The BSI has been used extensively in both clinical and non-clinical populations (e.g. Ashmore, Friedman, Reichmann, & Musante, 2008; Yang & Gysbers, 2007, respectively). However the general consensus is that for non-clinical populations the BSI is best viewed as a measure of non specific distress or psychological adjustment. The scale gives three summary indexes, 1) General Severity Index (GSI); a weighted

frequency score based on the sum of ratings on each symptom, 2) Positive Symptom Total (PST); a frequency count of the number of symptoms, and 3) Positive Symptom Distress Index (PSDI); a score reflecting the intensity of the distress. Thus instead of employing the nine primary factors for the purposes of this study an indicator of general distress was employed; the Positive Symptom Distress Index (PSDI). The PSDI can be regarded as a summary of the BSI as it is calculated by dividing the sum of the item scores by the number of symptoms that have been scored. Range therefore varies from sample to sample, in this it was 0-7 with a mean of 1.66 and a standard deviation of 1.19. A score of 1.83 or greater indicates a potential case.

The BSI was chosen for use in this study instead of the GHQ (utilized in Study 1) as it is considered to be a more sensitive measure, having being derived from psychiatric interviews and used extensively with both clinical and non-clinical populations (Peveler and Fairburn, 1990). This increased sensitivity is due to two main differences. First of all the BSI picks up on the entire range of symptoms including dimensions such as hostility and psychosis, whereas the GHQ focuses on depression, anxiety and somatization. Secondly the BSI is sensitive to chronicity of symptomatology whereas the GHQ tends to focus on the previous month. The BSI generates similar results to the GHQ, and is used in similar ways, in this case the potential increased sensitivity led to it being chosen for the current study. However it must be acknowledged that the use of a different measure in this study may make comparisons with Study one difficult and must be recognized as a potential confound.

9.3.4 Procedure

A target sample of 1200 participants were assessed by postal questionnaire. The target sample was identified randomly from a list of addresses from the Census data for one Local Government Area in the UK with a population of approximately 200,000. Participants were provided with a covering letter assuring them of confidentiality, informing them of the purpose of the study and indicating that participation was voluntary. Participants were also assured of anonymity, they were provided with a

unique participant number known only to themselves and the researcher, and names were not recorded.

The questionnaire sent to the target sample included a covering letter, explaining the purpose of the study and assuring participants of their rights. The scales were included in the questionnaire, as were instructions for responding to each scale. A stamped addressed envelope was also included for participants to return their completed questionnaire to the researcher. A total of 574 completed questionnaires were received (47.83% of the target sample).

9.4 Results

9.4.1 Rationale for Analysis

The primary purpose of the current study was to further test the hypothesised relationship between the sex constellation of siblings in intact and non-intact families, in terms of family environment, social support, perceived control, optimism, pessimism, and psychological distress, and to additionally test the relationship with achievement motivation, problem solving style, and coping style. Previous research showed an interaction between participants' sex and sibling sex structure, therefore in order to explore this, a participant sex by sibling sex structure variable was computed; a sibling sex constellation variable. This sibling sex constellation variable had 8 levels; 1) male singleton, 2) female singleton, 3) male with brother only, 4) female with brother only, 5) male with sister only, 6) female with sister only, 7) male with both brother and sister, and 8) female with both brother and sister. While the majority of those with siblings had just one brother or sister, or one of each, some did have more than one sister or more than one brother. The use of this composite variable (sibling sex constellation) allowed easier interpretation of statistical analysis and also allowed testing for two-way interaction effects rather than more complex three-way interactions.

9.4.2 Descriptive statistics

While this composite variable is the main focus in analysis, for completeness descriptive statistics for participant sex, intact versus broken home, and sibling sex structure were calculated and are shown in Table 9.1.

Table 9.1: Means and standard deviations for dependent variables categorised by sex and family structure.								
	Sex		Family structure					
Variable	Male (N=251)	Female (N=323)	Intact home (N=392)	Broken Home (N=182)	Only child (N=112)	Sister (N=171)	Brother (N=163)	Brother and Sister (N=128)
Distress	1.6(.0)	1.7(1.3)	1.6(1.1)	1.8 (1.4)	1.9(1.2)	1.4(1.2)	1.6(1.2)	2.0(1.1)
Social support	7.6(1.7)	7.6(1.9)	7.7(1.6)	7.5 (2.2)	7.2(2.4)	8.9(1.1)	6.5(1.4)	7.5(1.2)
Perceived control	4.9(1.9)	4.6(1.9)	4.7 (1.9)	4.7 (2.1)	4.8 (1.9)	4.8 (1.9)	4.8 (1.9)	4.3 (1.8)
Optimism	9.2(2.2)	9.5(2.7)	9.4 (2.2)	9.1(2.9)	7.9 (3.5)	9.5 (2.1)	9.8 (1.8)	9.7 (2.0)
Pessimism	6.4(2.4)	6.3(2.4)	6.3(2.3)	6.4(2.5)	6.6(2.4)	5.7(2.3)	6.5(2.3)	6.8(2.4)
Achievement motivation	6.4(2.1)	5.8(1.9)	5.9(1.9)	6.3(2.1)	5.5(2.4)	7.2(1.5)	4.9(1.6)	6.4(1.6)
Problem solving style	7.1(1.6)	7.2(1.4)	7.1(1.6)	7.3(1.2)	7.1(1.3)	8.1(1.2)	6.3(1.1)	7.1(1.7)
Family relationship	8.6(3.4)	9.2(3.0)	9.2(2.9)	8.5(3.7)	9.4(2.6)	9.1(3.2)	8.9(3.6)	8.3(2.9)
Personal growth	9.6(3.4)	10.3(2.7)	10.0(2.9)	9.8(3.1)	9.8(3.1)	10.1(2.8)	9.9(3.2)	10.0(3.2)
Systems maintenance	9.9(2.4)	10.9(2.5)	10.4(2.4)	10.7(2.6)	10.6(2.1)	10.5(2.6)	10.6(2.5)	10.5(2.7)
Rational coping	25.8(5.6)	27.7 (4.6)	26.7 (5.3)	27.3 (4.7)	24.6 (5.7)	27.42(5.8)	27.6 (4.5)	27.2(4.4)
Emotion coping	14.9 (3.7)	16.2 (3.1)	15.7 (3.4)	15.7 (3.6)	14.9 (2.9)	15.2 (3.9)	16.3 (3.1)	16.3 (3.5)
Avoidance coping	15.1 (3.5)	16.9 (3.5)	15.9 (3.7)	16.6 (3.4)	15.34(3.8)	16.5 (3.7)	16.6 (3.3)	15.8 (3.6)

9.4.3 Multivariate analysis of variance

Again for completeness and to allow comparisons with study 1 the next stage in analysis used a Multivariate analysis of variance (Manova) with intact versus non-intact homes, participant sex, and sibling sex structure as the independent variables and psychological distress, social support, perceived control, optimism, pessimism, achievement motivation, problem solving style, the family environment dimensions of family relations, systems maintenance, and personal growth, and the second order COPE factors; rational coping, emotion coping, and avoidance coping as the dependant variables. The means and standard deviations for this analysis are shown in Table 9.1.

There were main effects for participants' sex on, achievement motivation ($F(1,574) = 25.81, P < .001$), family relations ($F(1,574) = 13.82, P < .001$), systems maintenance ($F(1,574) = 9.77, P < .01$), personal growth ($F(1,574) = 8.47, P < .01$), rational coping ($F(1,574) = 5.38, P < .05$), and avoidance coping ($F(1,574) = 16.83, P < .001$). Females scored higher than males on all of the variables except achievement motivation, for which the males had higher scores.

There were main effects for intact / broken home on psychological distress ($F(1,574) = 5.90, p < .01$), achievement motivation ($F(1,574) = 10.86, p < .001$), problem-solving style ($F(1,574) = 9.07, p < .01$), family relations ($F(1,574) = 9.03, p < .01$), systems maintenance ($F(1,574) = 4.13, p < .05$), rational coping ($F(1,574) = 4.59, p < .05$), and avoidance coping ($F(1,574) = 6.56, p < .01$). Participants from broken homes scored higher than those from intact homes on all variables except for family relations, for which participants from intact homes scored higher.

There were main effects for sibling sex structure on psychological distress ($F(3,574) = 6.51, P < .001$), social support ($F(3,574) = 71.44, P < .001$), perceived control ($F(3,574) = 3.85, P < .01$), optimism ($F(3,574) = 13.15, P < .001$), pessimism ($F(3,574) = 6.99, P < .001$), achievement motivation ($F(3,574) = 41.35, P < .001$), problem solving style ($F(3,574) = 43.80, P < .001$), rational coping ($F(3,574) = 6.99, P < .001$), and emotion coping ($F(3,574) = 6.86, P < .001$). Participants with sisters had the lowest distress

scores and the highest scores for social support, perceived control, achievement motivation, and problem solving style. Participants with brothers had the lowest scores for social support, achievement motivation and problem solving style. Singletons showed the lowest scores for optimism, rational coping and emotion coping. Participants with both brothers and sisters showed the highest distress scores.

There were significant interactions for participant sex by intact/non-intact home on psychological distress ($F(1,574) = 4.02, p < .05$), achievement motivation ($F(1,574) = 21.12, p < .001$), problem-solving style ($F(1,574) = 13.53, p < .001$), family personal growth ($F(1,574) = 5.18, p < .05$), family relations ($F(1,574) = 27.18, p < .001$), rational coping ($F(1,574) = 10.48, p < .001$), emotion coping ($F(1,574) = 9.18, p < .01$), and avoidance coping ($F(1,574) = 6.48, p < .01$).

There were significant interactions for participant sex by sibling sex structure on psychological distress ($F(1,574) = 9.26, p < .001$), social support ($F(1,574) = 5.66, p < .001$), perceived control ($F(1,574) = 3.06, p < .05$), problem-solving style ($F(1,574) = 4.04, p < .01$), family systems maintenance ($F(1,574) = 12.47, p < .001$), family personal growth ($F(1,574) = 7.14, p < .001$), family relations ($F(1,574) = 7.21, p < .001$), rational coping ($F(1,574) = 3.79, p < .01$), and emotion coping ($F(1,574) = 3.89, p < .01$) (see Appendix D for illustrations of the significant effects from this analysis).

9.4.4 Sibling sex constellation

The next stage in analysis used the composite sibling sex constellation variable and intact/non-intact homes as independent variables in a second Manova with psychological distress, social support, perceived control, optimism, pessimism, achievement motivation, problem solving style, the family environment dimensions of family relations, systems maintenance, and personal growth, and the second order COPE factors; rational coping, emotion coping, and avoidance coping as the dependant variables. Means and standard deviations for this are shown in Table 9.2.

There were main effects for sibling sex constellation on psychological distress ($F(7,574) = 7.86, P < .001$), social support ($F(7,574) = 33.94, P < .001$), perceived control ($F(7,574) = 3.33, P < .01$), optimism ($F(7,574) = 5.89, P < .001$), pessimism ($F(7,574) = 3.20, P < .01$), achievement motivation ($F(7,574) = 22.33, P < .001$), problem solving style ($F(7,574) = 21.36, P < .001$), family relations ($F(7,574) = 8.25, P < .001$), systems maintenance ($F(7,574) = 8.81, P < .001$), personal growth ($F(7,574) = 5.81, P < .001$), rational coping ($F(7,574) = 5.04, P < .001$), emotion coping ($F(7,574) = 5.37, P < .01$), and avoidance coping ($F(7,574) = 3.96, P < .001$).

Table 9.2: Means and standard deviations for dependent variables categorised by sibling sex constellation.								
Variable	Female singleton (N=54)	Male singleton (N=58)	Female with sister (N=92)	Male with sister (N=79)	Female with brother (N=98)	Male with brother (N=65)	Female with both (N=79)	Male with both (N=49)
Distress	1.6(1.2)	2.1(1.1)	1.3(1.2)	1.5(1.1)	1.8(1.4)	1.8(0.9)	2.3(1.2)	1.4(0.8)
Social support	7.3(2.7)	7.0(2.0)	9.1(1.3)	8.8(0.8)	6.4(1.3)	6.7(1.5)	7.5(1.1)	7.7(1.4)
Perceived control	4.7 (1.9)	4.9 (2.0)	4.5 (1.9)	5.2 (2.0)	4.7 (1.9)	5.1 (2.1)	4.4 (2.1)	4.0 (1.4)
Optimism	8.1(4.1)	7.8 (2.9)	9.6 (2.3)	9.5 (2.0)	10.0 (2.0)	9.5 (1.5)	9.6 (2.3)	9.9 (1.5)
Pessimism	6.5(2.5)	6.7(2.4)	5.7(2.2)	5.8(2.6)	6.4(2.3)	6.6(2.2)	6.7(2.5)	6.9(2.3)
Achievement motivation	5.2(2.5)	5.7(2.3)	7.0(1.5)	7.4(1.6)	4.7(1.2)	5.3(1.9)	6.0(1.4)	6.9(1.7)
Problem solving style	7.3(1.0)	6.8(1.6)	8.3(1.3)	7.8(1.0)	6.2(1.0)	6.4(1.1)	7.1(1.2)	7.1(2.3)
Family relationship	9.8(2.8)	8.0(2.4)	9.1(2.9)	9.2(3.5)	7.5(3.1)	7.3(3.6)	7.9(2.6)	9.1(3.4)
Personal growth	10.1(2.2)	9.5(3.7)	10.3(2.8)	9.9(2.7)	10.7(2.4)	8.6(3.7)	9.9(3.1)	10.2(3.3)
Systems maintenance	11.4(2.2)	9.8(1.6)	10.9(2.8)	9.9(2.2)	11.2(2.4)	9.4(2.5)	10.2(2.6)	10.9(2.8)
Rational coping	26.6(2.9)	22.7(6.8)	27.8(5.7)	27.0(5.0)	28.7(4.2)	26.0(4.4)	27.2(4.3)	27.0(4.7)
Emotion coping	15.5(2.1)	14.3(3.4)	16.3(3.5)	13.9(3.9)	16.4(3.0)	16.2(3.1)	16.5(3.3)	15.9(3.7)
Avoidance coping	16.5(3.5)	14.2(3.7)	17.4(3.9)	15.4(3.2)	17.3(2.8)	15.5(3.6)	16.4(3.7)	14.9(3.4)

Females with sisters had the lowest psychological distress scores, and the highest scores on social support, problem-solving style, and avoidance coping. Male singleton, female with both brothers and sisters, female with brother and male with brother were the highest scorers on psychological distress. This is similar to study 1 showing a positive impact for female siblings and a more negative impact for both maleness and male siblings. The latter could be interpreted as the absence of the protective presence of a female sibling. Without listing every one, the same pattern occurs for social support, perceived control, optimism, and pessimism. In addition this study shows that female with sister and male with sister score highest on achievement motivation and problem-solving style. This cluster of psychosocial factors are each important in a psychological sense in their own right and have a combined relationship with psychological distress. Clearly the presence of a female sibling provides a protective element in the development of psychological distress. It was postulated previously that this effect might be mediated through family environment and again this is supported in that female with sister and male with sister score high on family relations, personal growth and systems maintenance. However female singleton and male with both brother and sister score equally high on family relations and personal growth further supporting the sex hypothesis. In terms of the COPE second order factors the picture is a little less clear. In terms of rational coping there is no significant difference between most of the categories except for male singleton whose scores are significantly lower than the rest. On emotion coping male with sister scores lowest with male singleton a very close second. Similarly with avoidance coping, there is no discernable pattern. These scores are difficult to interpret since there is no obvious pattern as with the other variables and may indicate that the second order factors may be insufficiently sensitive to effects.

There were significant interaction effects between sibling sex constellation and intact / broken home on psychological distress ($F(7,574) = 2.66, P < .01$), social support ($F(7,574) = 4.89, P < .001$), perceived control ($F(7,574) = 6.89, P < .001$), optimism ($F(7,574) = 3.44, P < .001$), achievement motivation ($F(7,574) = 6.66, P < .001$), problem solving style ($F(7,574) = 3.28, P < .01$), family relations ($F(7,574) = 7.43, P < .001$), systems maintenance ($F(7,574) = 6.56, P < .001$), personal growth ($F(7,574) = 6.36, P < .001$), rational coping ($F(7,574) = 2.55, P < .01$), emotion coping ($F(7,574) = 2.82,$

$P < .01$), and avoidance coping ($F(7,574) = 2.76$, $P < .01$). The means and standard deviations for this analysis are shown in Table 9.3 and the effects are illustrated in Figures 9.1 – 9.12.

Interestingly highest scores on distress occur in male singletons in broken homes, female with both brother and sister in both broken and intact homes, female with brother in broken homes and female singletons in intact homes. Female singletons in broken homes have low distress scores as do males with brothers in intact homes. While the pattern is complex there does seem to be a mediating impact of sibling sex. This is also evident in terms of social support, perceived control, and optimism. While the presence of female siblings is positively indicated and the presence of male siblings negatively indicated, this is even more so in broken homes. There also appears to be a singleton effect with male singletons scoring more positively in intact homes while female singletons score more positively in broken homes. In terms of achievement motivation the presence of a sister is positively indicated for males in broken homes in that the highest scores are for males with sister or males with both, while the presence of a brother is negatively indicated for females in intact homes with lowest scores being reported by females with brothers in intact homes. Female singletons also score low on achievement motivation in broken homes. In terms of the family relations, personal growth, and systems maintenance dimensions of the family environment the presence of a brother is negatively indicated for males from broken homes, who report the lowest scores on all three dimensions. Females with sister and female singletons from broken homes show the highest scores on these variables, particularly on family relations. Again the patterns are complex but the impact of intact versus non-intact home is moderated in a positive direction by the presence of female siblings, and in a negative direction by the presence of a male sibling. The pattern of effects for the coping factors is again unclear.

Table 9.3: Means and standard deviations for dependent variables categorised by sibling sex constellation, and intact / broken homes.															
Sibling sex constellation	Intact / Broken home	N	Psychological distress	Social support	Perceived control	Optimism	Pessimism	Achievement motivation	Problem solving style	Family relations	Family Personal growth	Family Systems maintenance	Rational coping	Emotion coping	Avoidance coping
Female singleton	Intact	34	2.1(1.3)	7.9(1.6)	5.1(2.3)	9.4(3.0)	6.5(2.6)	6.3(1.4)	7.3(0.8)	8.6(2.4)	10.2(2.6)	10.8(2.4)	26.1(3.1)	15.5(2.6)	15.7(4.7)
	Broken	20	1.2(0.9)	6.9(3.3)	4.4(1.7)	7.2(4.5)	6.5(2.5)	4.3(2.7)	7.3(1.1)	10.6(2.7)	10.0(1.9)	11.8(2.1)	27.0(2.8)	15.6(1.7)	17.1(2.3)
Male singleton	Intact	35	1.9(0.9)	7.5(1.0)	5.6(1.7)	7.8(2.9)	6.6(2.6)	5.3(2.5)	6.6(1.7)	9.0(2.3)	9.3(4.0)	9.5(1.7)	22.2(7.4)	13.8(3.5)	14.0(3.9)
	Broken	23	2.8(1.4)	5.4(3.4)	2.6(1.2)	7.7(3.0)	6.8(1.8)	7.1(1.2)	7.7(0.5)	8.8(2.8)	9.9(1.9)	10.7(1.8)	24.3(4.5)	16.3(2.4)	15.1(3.1)
Female with sister	Intact	69	1.2(1.1)	9.0(1.4)	4.3(2.1)	9.4(2.4)	5.8(2.2)	7.1(1.4)	8.3(1.3)	8.6(3.1)	10.1(2.9)	10.9(3.1)	28.2(5.1)	16.6(3.3)	17.3(3.6)
	Broken	23	1.4(1.6)	9.4(0.7)	4.9(1.4)	10.2(1.8)	5.2(2.0)	6.8(1.6)	8.3(1.1)	10.6(2.2)	10.7(2.6)	11.0(1.7)	26.6(7.0)	15.5(3.9)	17.7(4.8)
Male with sister	Intact	50	1.4(1.2)	8.8(0.8)	4.6(1.8)	9.2(1.6)	5.8(2.6)	6.9(1.4)	7.8(1.1)	10.2(3.1)	10.4(2.5)	10.1(2.5)	26.5(5.5)	14.2(3.7)	15.3(3.1)
	Broken	29	1.6(0.9)	8.9(0.8)	6.3(1.9)	9.9(2.4)	5.7(2.5)	8.2(1.8)	7.9(0.8)	7.5(3.4)	9.2(2.9)	9.7(1.8)	27.9(3.9)	13.4(4.3)	15.7(3.3)
Female with brother	Intact	77	1.6(1.1)	6.5(1.2)	4.8(1.7)	10.4(1.5)	6.2(2.1)	4.4(1.1)	6.3(1.0)	10.3(3.0)	10.7(2.7)	11.3(2.4)	29.4(3.4)	16.8(2.7)	17.8(2.4)
	Broken	21	2.2(1.8)	6.1(1.6)	4.3(2.3)	9.2(2.6)	6.6(2.7)	5.4(1.1)	5.9(1.0)	9.3(3.3)	10.7(1.9)	11.1(2.3)	27.3(5.4)	15.5(3.4)	16.0(3.4)
Male with brother	Intact	44	1.1(0.8)	6.4(1.7)	5.1(2.2)	9.8(1.6)	6.1(1.8)	5.1(2.2)	6.4(1.2)	8.4(2.5)	10.0(2.9)	10.3(1.6)	25.3(4.8)	16.0(2.6)	14.7(3.4)
	Broken	21	1.7(1.0)	7.3(0.5)	5.1(1.8)	9.0(1.1)	7.6(2.8)	5.8(1.2)	6.6(0.5)	5.6(3.4)	5.7(3.7)	7.6(2.9)	27.4(3.4)	16.5(4.0)	17.3(3.6)
Female with both	Intact	54	2.3(1.1)	7.4(1.1)	4.6(2.1)	9.5(2.4)	6.8(2.6)	5.9(1.4)	7.0(1.2)	8.1(2.2)	9.3(2.9)	9.9(2.4)	27.0(4.3)	16.5(3.4)	16.4(3.8)
	Broken	25	2.5(1.4)	7.5(1.2)	3.9(2.1)	9.8(2.0)	6.3(2.1)	6.3(1.4)	7.1(1.2)	7.6(3.3)	11.1(3.3)	10.9(2.9)	27.8(4.3)	16.6(3.4)	16.4(3.5)
Male with both	Intact	29	1.4(0.7)	7.6(1.3)	3.9(1.5)	9.8(1.5)	6.7(1.9)	6.6(1.7)	6.8(2.5)	9.6(3.1)	9.9(3.3)	10.2(2.5)	26.2(4.2)	15.3(3.5)	14.5(3.5)
	Broken	20	1.6(1.0)	8.1(1.6)	4.6(1.1)	10.7(1.6)	7.9(3.3)	8.0(1.3)	8.6(1.3)	6.7(3.4)	11.9(3.6)	14.1(2.2)	30.6(5.1)	18.6(3.5)	17.2(2.1)

Figure 9.1: Interaction between intact/ non-intact homes and sibling sex constellation on psychological distress

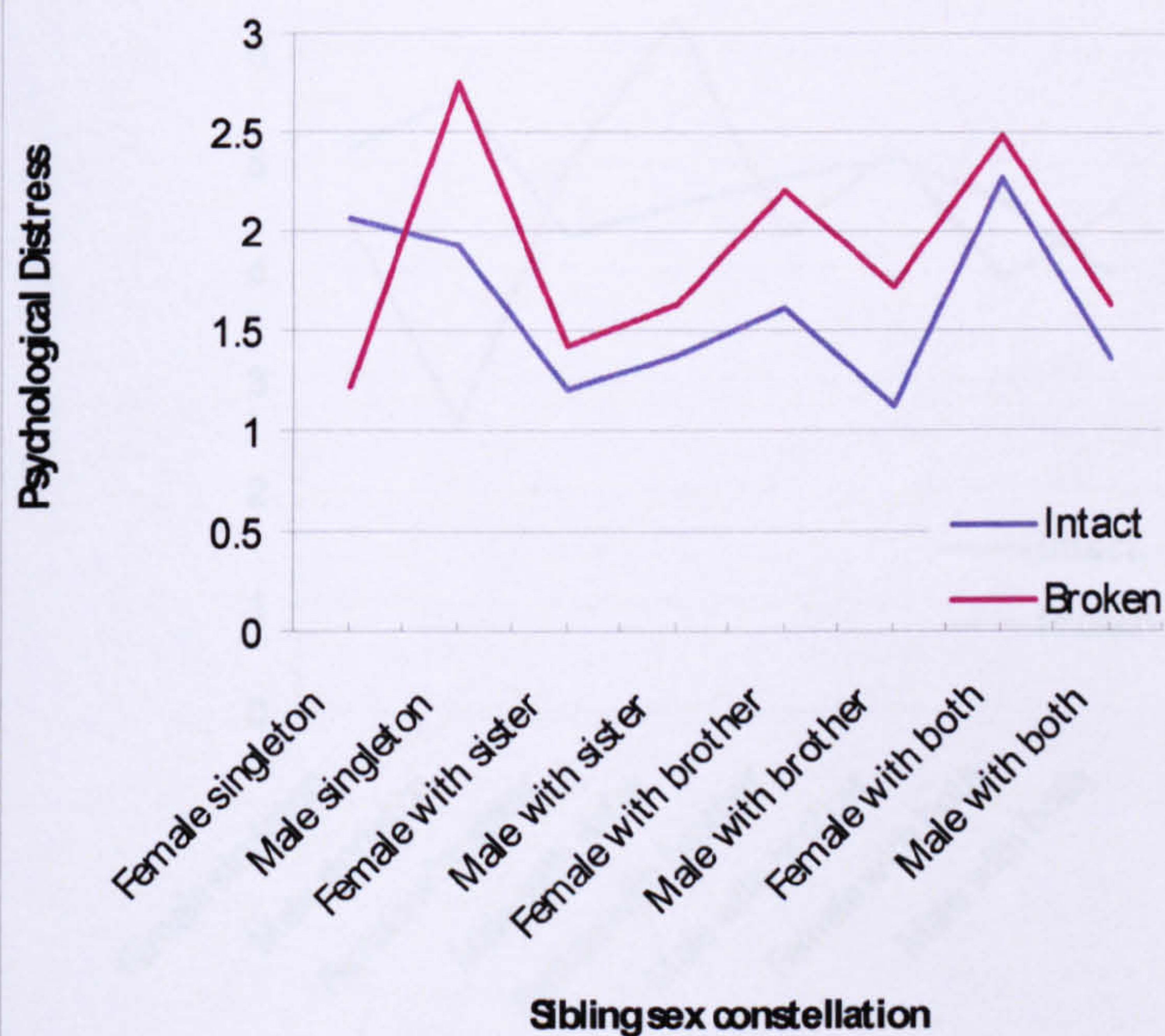


Figure 9.2: Interaction between intact/ non-intact homes and sibling sex constellation on social support

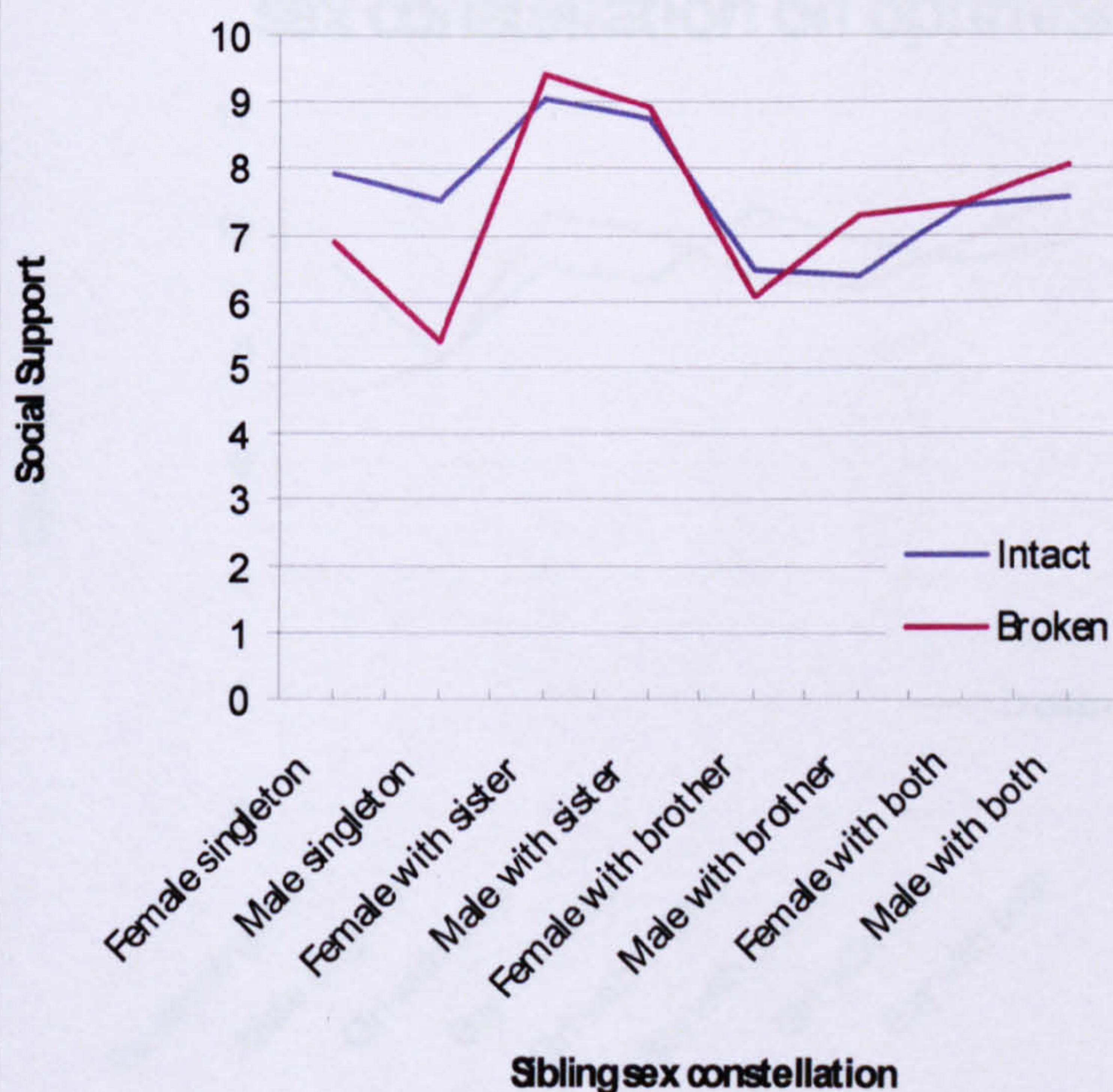


Figure 9.3: Interaction between intact/ non-intact homes and sibling sex constellation on perceived control

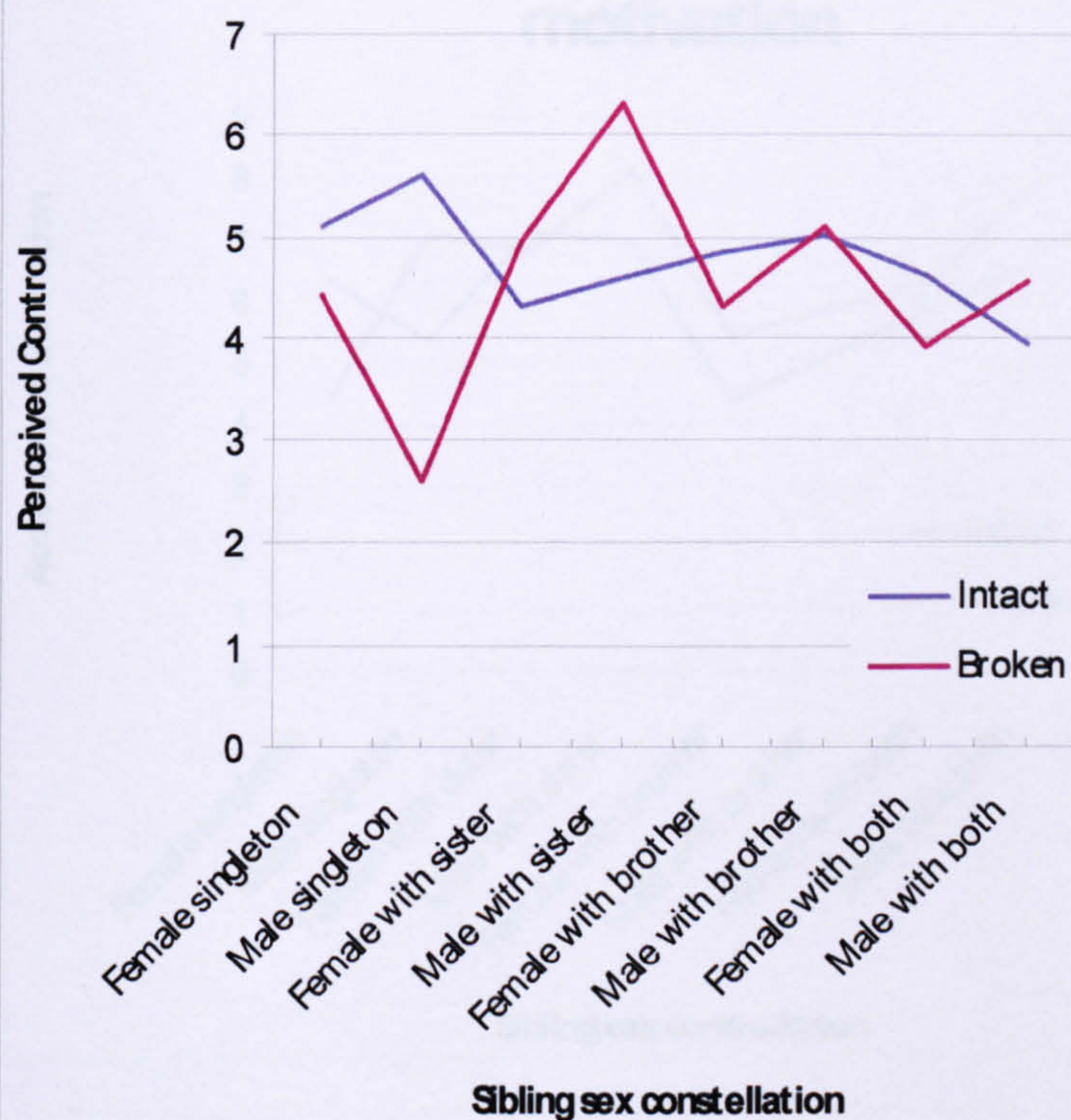


Figure 9.4: Interaction between intact/ non-intact homes and sibling sex constellation on optimism

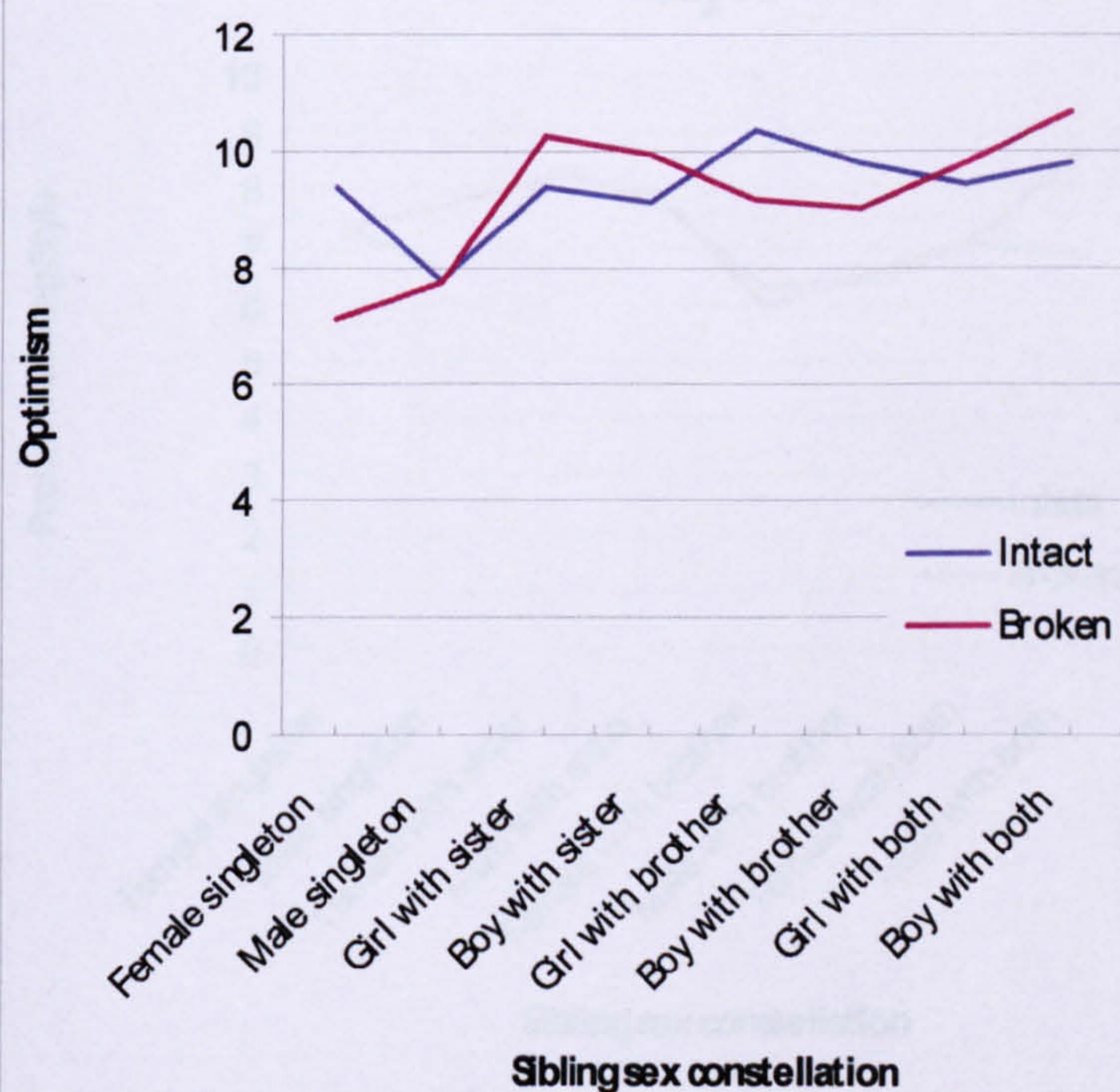


Figure 9.5: Interaction between intact/ non-intact homes and sibling sex constellation on achievement motivation

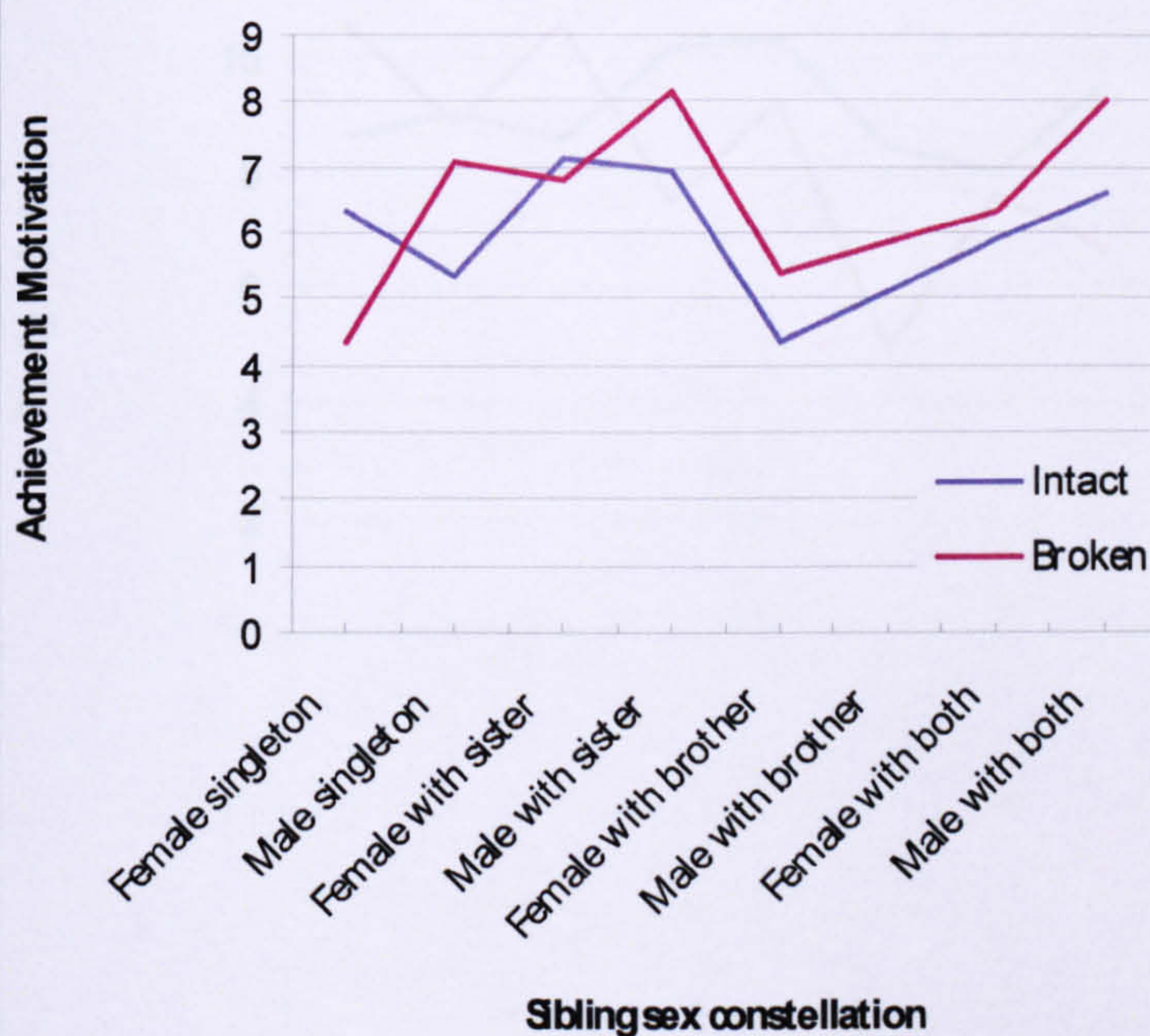


Figure 9.6: Interaction between intact/ non-intact homes and sibling sex constellation on problem-solving style

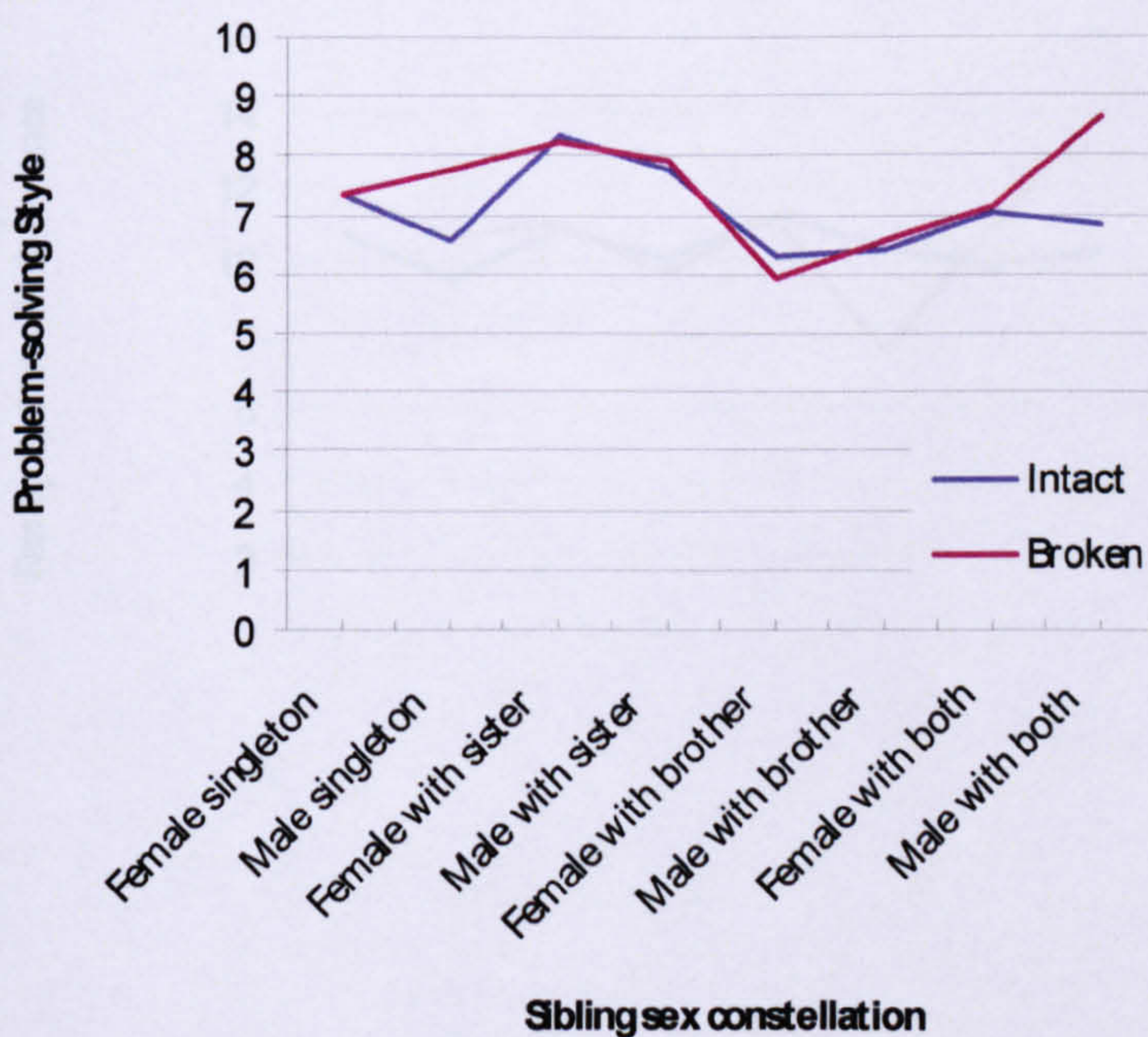


Figure 9.7: Interaction between intact/ non-intact homes and sibling sex constellation on family relations

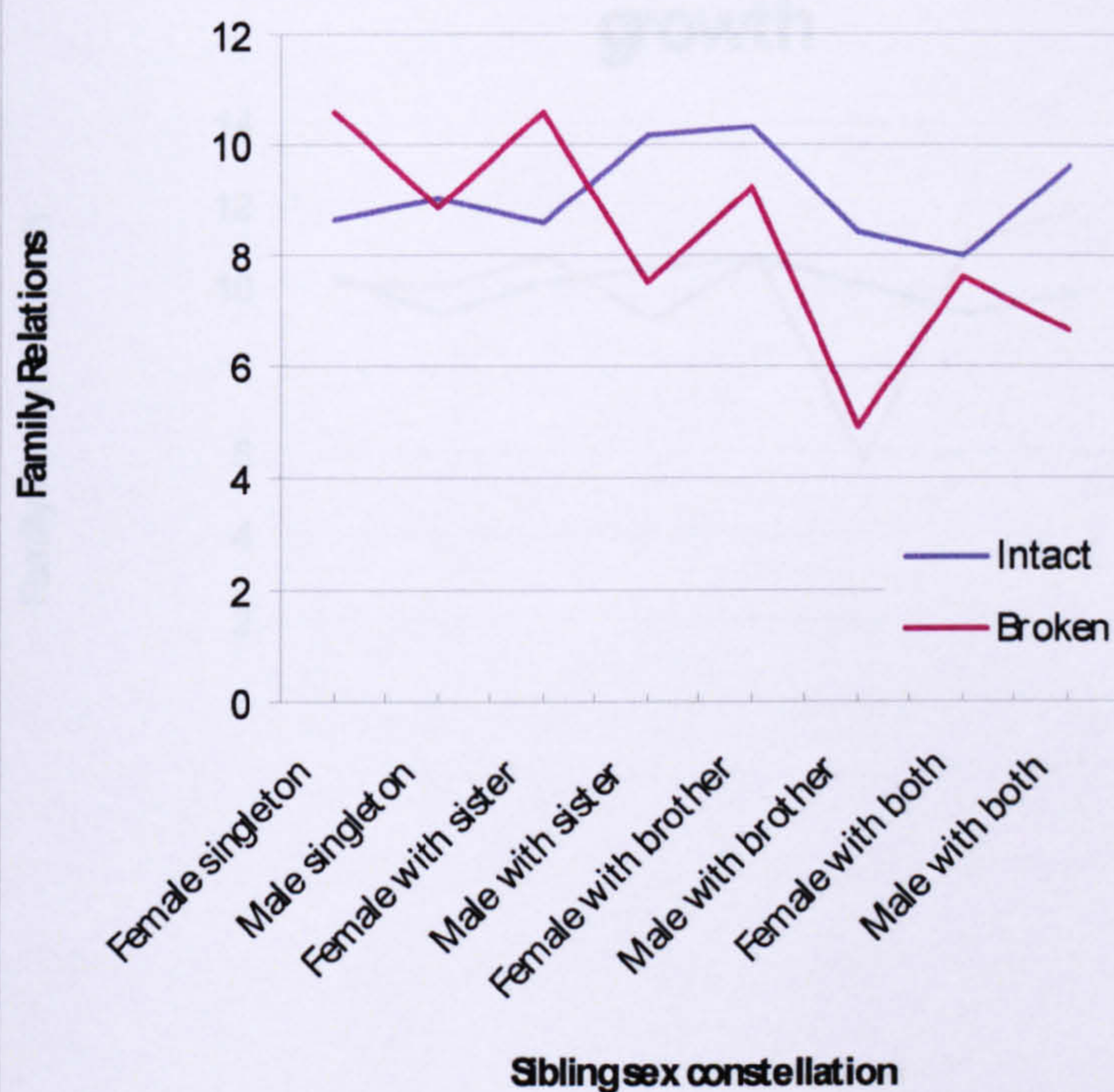


Figure 9.8: Interaction between intact/ non-intact homes and sibling sex constellation on family systems maintenance

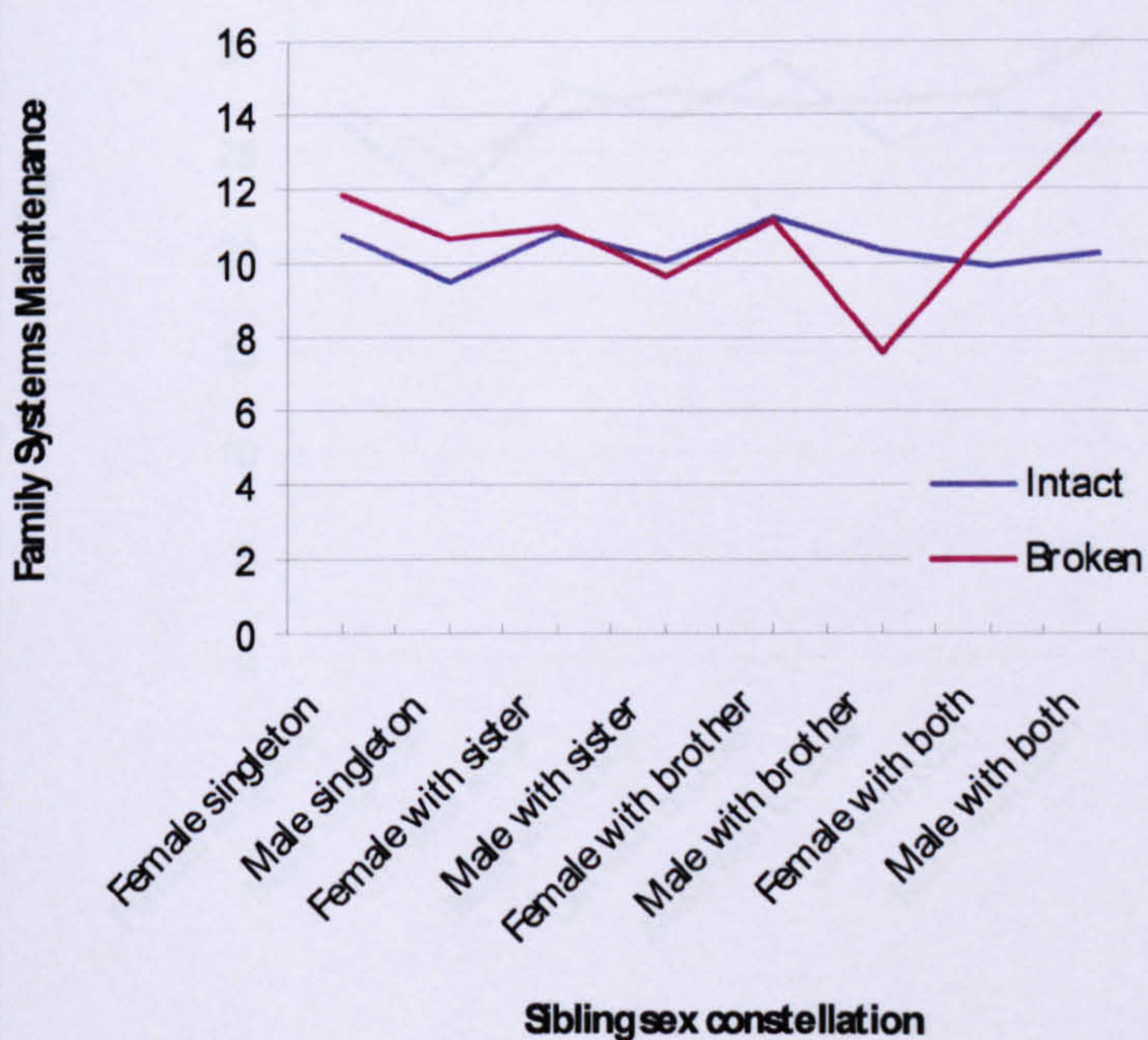


Figure 9.9: Interaction between intact/ non-intact homes and sibling sex constellation on family personal growth

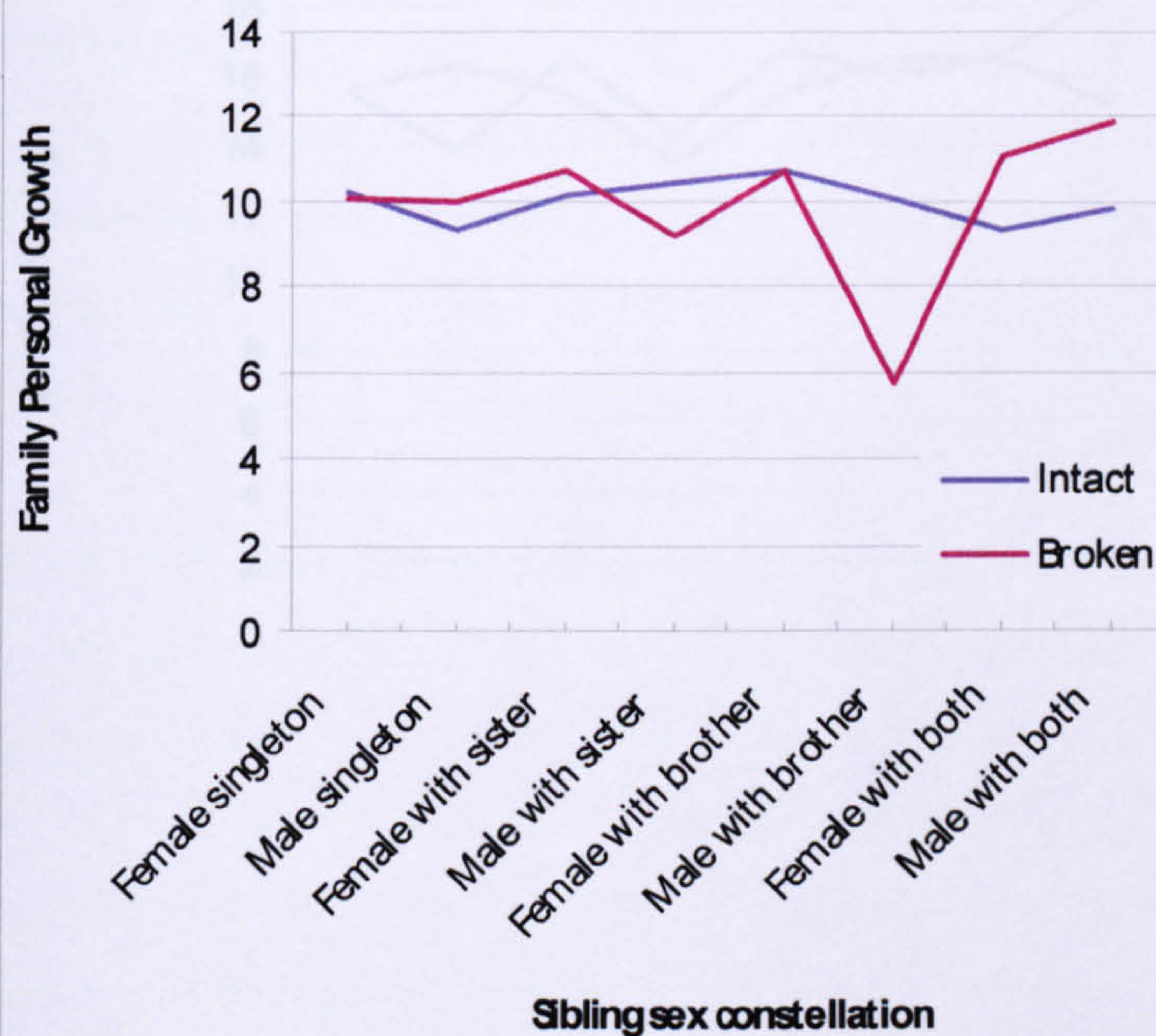


Figure 9.10: Interaction between intact/ non-intact homes and sibling sex constellation on rational coping

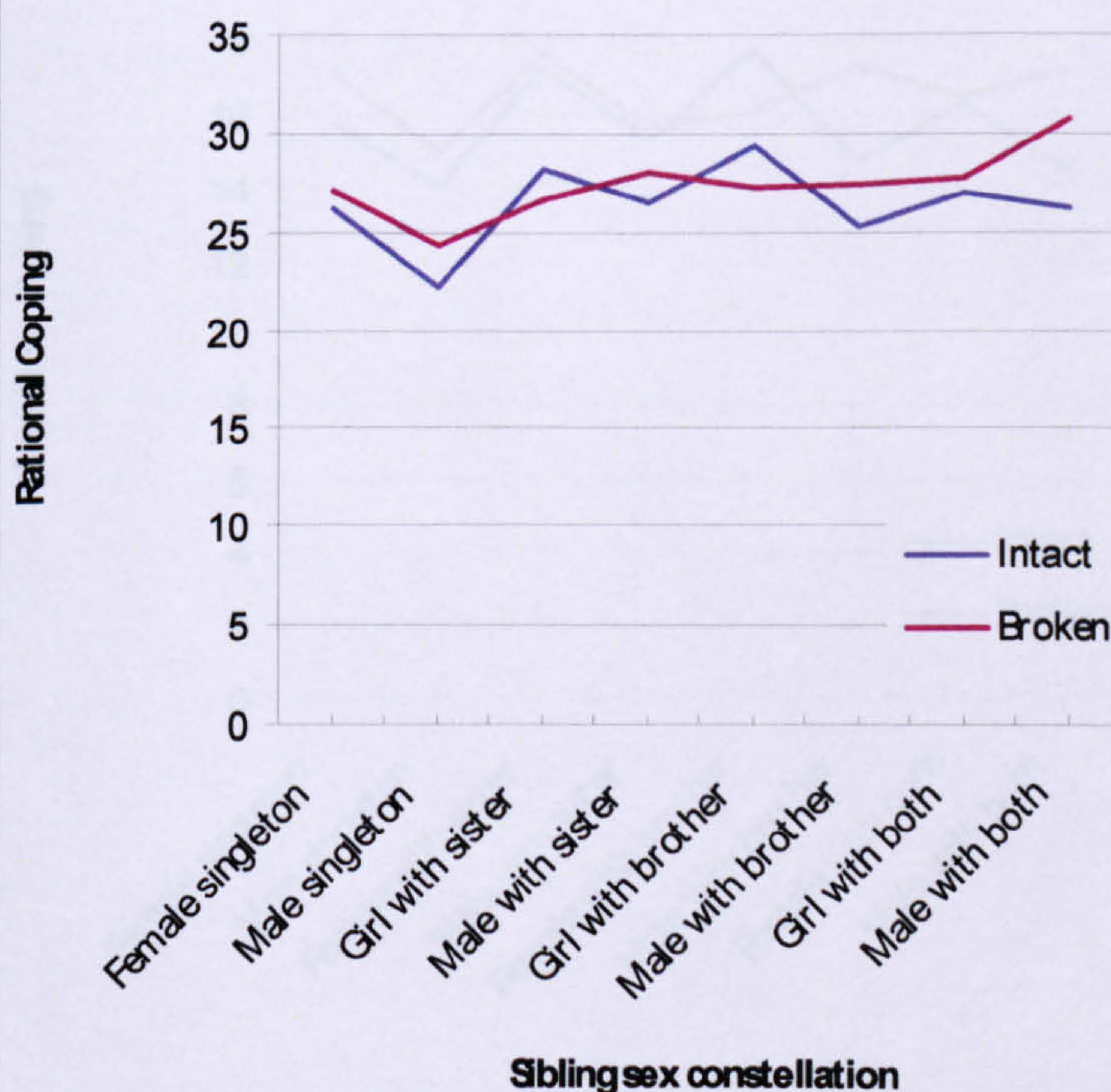


Figure 9.11: Interaction between intact/ non-intact homes and sibling sex constellation on emotion coping

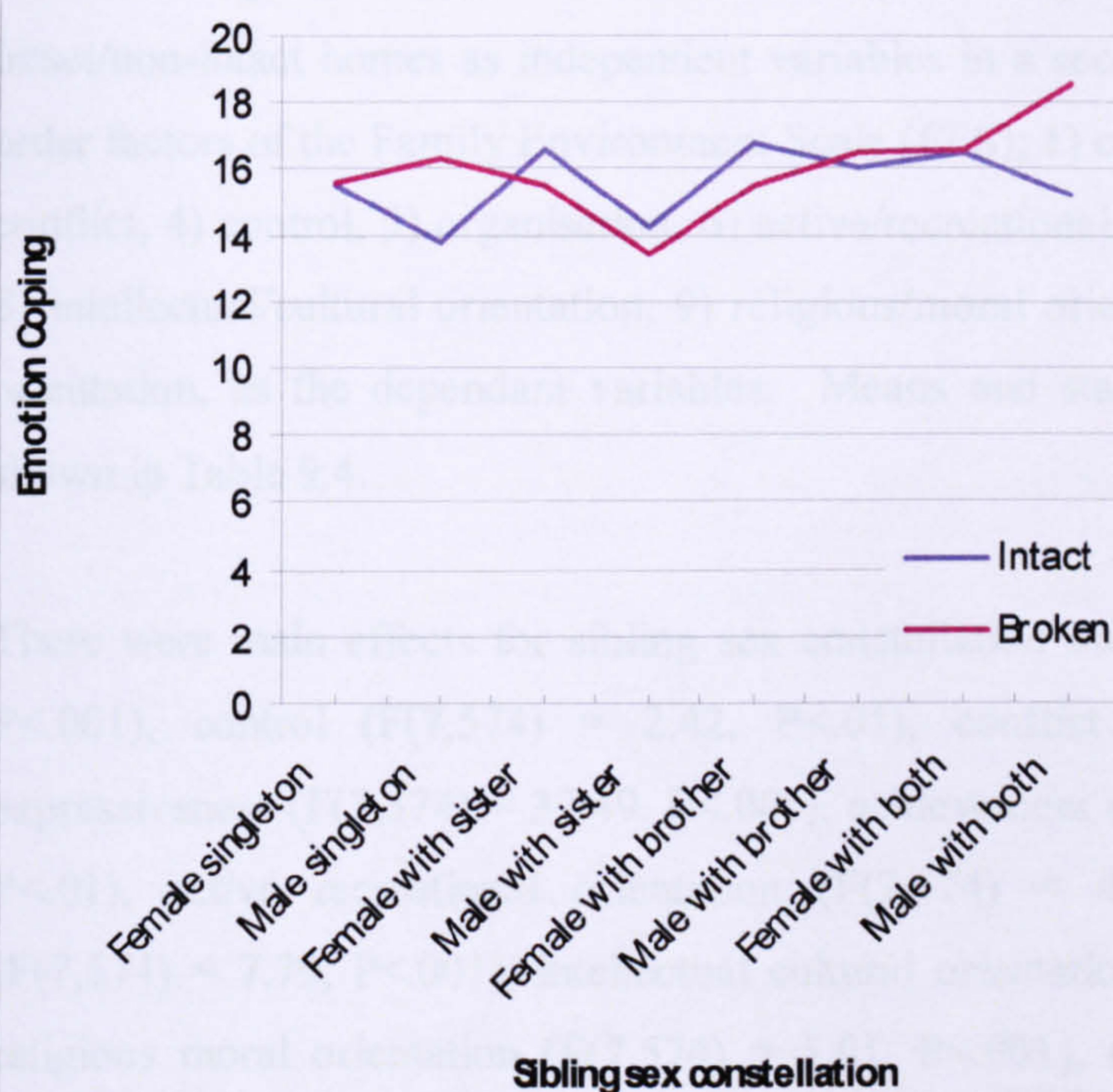
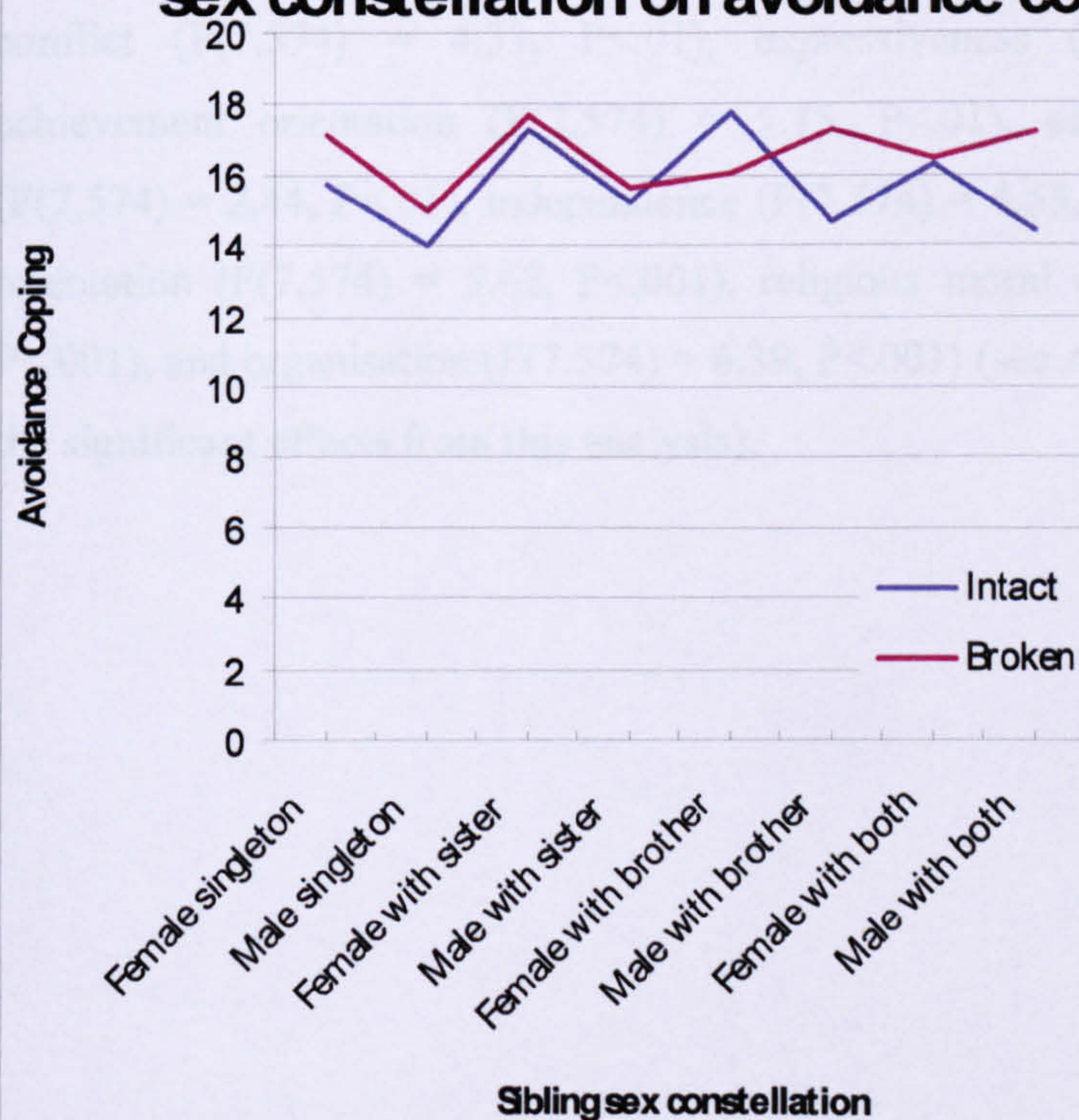


Figure 9.12: Interaction between intact/ non-intact homes and sibling sex constellation on avoidance coping



9.4.5 Sibling sex constellation and the FES First Order Factors

The next stage in analysis used the composite sibling sex constellation variable and intact/non-intact homes as independent variables in a second Manova with the 10 first order factors of the Family Environment Scale (FES); 1) cohesion, 2) expressiveness, 3) conflict, 4) control, 5) organisation, 6) active/recreational orientation, 7) independence, 8) intellectual/cultural orientation, 9) religious/moral orientation, and 10) achievement orientation, as the dependant variables. Means and standard deviations for this are shown in Table 9.4.

There were main effects for sibling sex constellation on cohesion ($F(7,574) = 60.53$, $P < .001$), control ($F(7,574) = 2.42$, $P < .01$), conflict ($F(7,574) = 5.39$, $P < .01$), expressiveness ($F(7,574) = 37.49$, $P < .001$), achievement orientation ($F(7,574) = 35.35$, $P < .01$), active recreational orientation ($F(7,574) = 4.88$, $P < .001$), independence ($F(7,574) = 7.79$, $P < .001$), intellectual cultural orientation ($F(7,574) = 6.98$, $P < .001$), religious moral orientation ($F(7,574) = 5.01$, $P < .001$), and organisation ($F(7,574) = 5.42$, $P < .001$).

There were significant interaction effects between sibling sex constellation and intact / broken home on cohesion ($F(7,574) = 5.82$, $P < .001$), control ($F(7,574) = 5.12$, $P < .01$), conflict ($F(7,574) = 4.33$, $P < .01$), expressiveness ($F(7,574) = 6.29$, $P < .001$), achievement orientation ($F(7,574) = 5.75$, $P < .01$), active recreational orientation ($F(7,574) = 2.44$, $P < .01$), independence ($F(7,574) = 4.53$, $P < .001$), intellectual cultural orientation ($F(7,574) = 5.62$, $P < .001$), religious moral orientation ($F(7,574) = 3.71$, $P < .001$), and organisation ($F(7,574) = 6.39$, $P < .001$) (see Appendix D for illustrations of the significant effects from this analysis).

Table 9.4: Means and standard deviations for the first order factors of the Family Environment Scale categorised by sibling sex constellation, and intact / broken homes.

sibling sex constellation	Intact / Broken home	N	Cohesion	Expressiveness	Conflict	Control	Organisation	Active / recreational orientation	Independence	Intellectual / cultural orientation	Religious / moral orientation	Achievement orientation
Female singleton	Intact	34	9.0(2.5)	7.1(3.0)	9.0(4.3)	4.2(1.4)	7.4(2.7)	9.6(4.7)	4.6(1.4)	9.7(3.4)	3.6(2.5)	8.3(3.2)
	Broken	20	9.8(2.7)	10.5(3.8)	10.4(3.0)	4.1(1.6)	8.2(2.6)	10.3(3.2)	5.6(1.2)	9.8(3.9)	1.6(1.5)	8.8(2.7)
Male singleton	Intact	35	8.8(2.9)	6.8(1.9)	10.7(4.3)	4.5(1.5)	6.1(2.2)	9.1(3.8)	3.7(0.9)	9.0(3.9)	2.7(3.4)	7.7(4.3)
	Broken	23	9.2(3.3)	7.8(3.2)	8.7(3.1)	3.2(1.0)	9.5(1.5)	8.8(2.2)	3.2(1.2)	8.2(1.5)	4.2(2.4)	9.2(1.8)
Female with sister	Intact	69	13.5(3.5)	10.5(3.5)	8.6(4.5)	4.0(1.3)	8.2(3.6)	9.7(4.6)	4.1(1.7)	9.6(3.5)	3.8(2.8)	11.5(3.2)
	Broken	23	15.4(2.7)	13.5(2.8)	9.3(3.3)	4.4(1.3)	7.0(2.2)	11.3(4.7)	5.0(1.1)	10.8(2.9)	3.4(2.8)	10.9(1.9)
Male with sister	Intact	50	13.9(3.1)	10.8(4.1)	10.6(4.1)	3.9(1.5)	7.2(3.6)	11.2(3.8)	4.1(1.9)	9.4(3.1)	2.6(1.4)	11.2(2.2)
	Broken	29	11.6(3.1)	9.4(4.6)	6.1(3.0)	4.7(0.8)	5.3(3.4)	10.2(4.0)	4.5(1.1)	6.5(5.0)	2.3(1.4)	11.5(2.3)
Female with brother	Intact	77	9.1(2.9)	7.4(3.6)	10.0(3.9)	3.9(1.3)	8.3(3.1)	11.5(4.1)	4.7(1.6)	9.8(3.6)	3.0(2.5)	6.4(2.9)
	Broken	21	8.3(3.6)	5.8(3.6)	9.4(3.9)	3.5(1.1)	8.8(2.8)	10.5(3.1)	4.4(1.9)	9.7(3.1)	3.7(2.9)	7.1(2.3)
Male with brother	Intact	44	6.9(4.1)	4.9(2.9)	8.9(3.8)	4.3(1.4)	6.9(3.6)	9.4(4.4)	4.2(1.8)	8.9(4.2)	2.3(2.1)	8.1(2.0)
	Broken	21	2.9(2.3)	3.1(2.9)	5.6(4.4)	3.0(1.5)	5.8(2.0)	5.8(4.2)	2.6(1.9)	3.7(3.6)	2.0(1.6)	4.1(3.6)
Female with both	Intact	54	6.9(2.7)	5.1(2.7)	7.4(3.9)	4.1(1.4)	6.6(3.2)	8.5(3.9)	4.3(1.3)	8.7(3.5)	3.9(3.1)	5.8(2.8)
	Broken	25	6.5(3.9)	5.5(2.8)	6.3(4.6)	4.1(1.5)	8.4(4.2)	9.7(3.8)	3.8(1.8)	10.2(4.3)	4.9(3.5)	7.3(2.8)
Male with both	Intact	29	10.6(3.1)	8.1(3.7)	9.4(4.1)	4.0(1.1)	6.6(3.1)	10.6(5.0)	4.7(1.3)	7.9(4.0)	2.2(2.1)	9.2(2.9)
	Broken	20	8.9(3.8)	5.6(3.5)	4.9(3.2)	4.7(0.7)	11.2(1.8)	11.1(4.8)	5.1(1.4)	9.1(2.9)	5.3(3.7)	10.6(2.1)

On cohesion, expressiveness, independence, and achievement orientation the impact of sibling sex constellation is very clear. Males and females with sisters score significantly higher than males and females with brothers while other categories fall in between. This effect is irrespective of intact / non-intact home. When intact / non-intact homes are considered the effect is moderated; having a sister increases the effect for females in non-intact homes but increased effects occur for males in intact homes. However having a brother is associated with decreased cohesion, expressiveness, independence, and achievement orientation, in non-intact homes for both sexes.

For conflict this effect is reversed in the sense that conflict is reduced by the presence of a sister for females in non-intact homes and males in intact homes. However the presence of a brother does significantly reduce conflict for males in broken homes and has no significant impact for females. Sibling sex constellation does impact on active-recreational orientation, intellectual-cultural orientation, religious-moral orientation, and organisation, in that the presence of a sister increases the score on each variable for females but not for males. For active-recreational orientation and intellectual-cultural orientation males with brothers seem to be worst off with significantly lower scores than any other category if they come from non-intact homes. On religious-moral orientation female singletons from non-intact homes have significantly lower scores while both females and males with both brothers and sisters from non-intact homes score significantly higher. While there is no simple pattern to these effects they demonstrate the wide ranging impact of the number of siblings, their sex and the sex of the individual when considered in conjunction with one another.

9.4.6 Sibling sex constellation and the COPE first order factors

The next stage in analysis used the composite sex by sibling structure and intact/non-intact homes as independent variables in a second Manova with the 13 first order factors of the COPE: 1) active coping, 2) planful coping, 3) seeking instrumental support, 4) seeking emotional support, 5) suppression, 6) use of religion, 7) positive reintegration and growth, 8) restraint, 9) acceptance, 10) venting emotions, 11) denial, 12) mental

disengagement, and 13) behavioural disengagement, as the dependant variables. Means and standard deviations for this are shown in Table 9.5.

There were main effects for sibling sex constellation on active coping ($F(7,574) = 3.49$, $p < .001$), planful coping ($F(7,574) = 3.50$, $p < .001$), seeking instrumental support ($F(7,574) = 4.16$, $P < .001$), seeking emotional support ($F(7,574) = 4.97$, $P < .001$), use of religion ($F(7,574) = 3.14$, $P < .01$), positive reintegration and growth ($F(7,574) = 2.91$, $P < .01$), restraint coping ($F(7,574) = 3.61$, $p < .001$), acceptance ($F(7,574) = 4.67$, $P < .001$), venting emotions ($F(7,574) = 2.22$, $P < .05$), and behavioural disengagement ($F(7,574) = 5.54$, $P < .001$).

There were significant interaction effects between sibling sex constellation and intact/broken home on planful coping ($F(7,574) = 3.54$, $P < .001$), seeking emotional support ($F(7,574) = 2.35$, $P < .05$), suppression ($F(7,574) = 5.88$, $P < .001$), use of religion ($F(7,574) = 2.29$, $P < .05$), positive reintegration and growth ($F(7,574) = 2.03$, $P < .05$), acceptance ($F(7,574) = 4.10$, $P < .001$), mental disengagement ($F(7,574) = 2.81$, $p < .01$), and behavioural disengagement ($F(7,574) = 3.68$, $p < .001$) (see Appendix D for illustrations of the significant effects from this analysis).

On planful coping the significant effect appears in singletons of both sexes in intact homes who show much lower levels of this variable. In terms of seeking instrumental support males with both brothers and sisters in non-intact homes, males with sisters in intact homes, and females with brothers in intact homes who score the highest, whilst male singletons in either broken or intact homes report the lowest scores. In line with other findings above on social support and family relations, it could be that the presence of both sisters and brothers enables males from broken homes to seek help given that singleton males had the lowest score on this variable. On suppression the largest gap occurs between male singletons in intact homes with the lowest score and male singletons in non-intact homes with the highest score. Female singletons from broken homes have the lowest acceptance scores while males with both brothers and sisters from broken homes score highest. Again the range of effects supports the importance of considering the number and sex of siblings in this context.

Table 9.5: Means and standard deviations for the first order factors of the COPE categorised by sibling sex constellation, and intact / broken homes.

Sibling sex constellation	Intact / Broken home	N	Active coping	Planful coping	Seeking Instrumental support	Seeking Emotional support	Suppression	Use of religion	Positive Reintegration and growth	Restraint	Acceptance	Venting emotions	Denial	Mental disengagement	Behavioural disengagement
Female singleton	Intact	34	5.9(1.3)	5.6(1.8)	5.6(0.8)	5.7(1.3)	6.1(1.4)	5.3(1.3)	5.3(1.2)	3.7(1.7)	3.8(0.9)	5.7(1.4)	5.8(2.0)	5.2(1.6)	4.3(2.3)
	Broken	20	6.5(1.0)	6.8(1.0)	5.7(1.0)	6.0(1.0)	5.6(0.8)	5.7(1.2)	5.2(1.2)	3.9(1.0)	2.9(1.8)	6.0(0.6)	6.1(1.0)	5.5(1.5)	4.9(2.2)
Male singleton	Intact	35	5.2(1.4)	3.9(3.3)	4.9(1.3)	5.9(0.8)	4.4(1.5)	5.4(1.6)	4.2(1.8)	3.5(2.4)	3.9(1.5)	5.7(1.0)	4.9(2.5)	6.0(1.2)	3.4(1.6)
	Broken	23	5.2(1.2)	5.9(0.9)	5.0(1.2)	5.9(0.4)	6.6(1.2)	5.5(1.7)	4.9(1.9)	3.9(1.3)	3.4(0.5)	5.3(0.5)	5.7(1.8)	4.9(2.1)	4.0(1.4)
Female with sister	Intact	69	6.2(1.6)	6.4(1.5)	6.0(1.4)	6.4(1.6)	5.9(1.3)	5.6(1.7)	5.5(1.6)	4.2(1.7)	4.1(1.9)	6.3(1.3)	5.9(1.7)	5.7(1.8)	5.1(1.5)
	Broken	23	5.9(2.0)	5.9(2.1)	5.8(1.7)	6.3(1.7)	5.3(1.5)	5.2(1.9)	5.3(1.7)	3.9(1.5)	3.7(1.5)	6.1(2.1)	6.1(1.5)	6.0(1.9)	5.4(1.9)
Male with sister	Intact	50	6.1(1.6)	5.6(1.3)	6.3(1.4)	5.7(1.6)	5.0(1.4)	5.3(1.5)	4.9(1.9)	3.5(1.5)	3.6(1.4)	5.3(1.7)	5.5(1.7)	5.4(1.4)	4.5(1.4)
	Broken	29	5.9(1.2)	6.2(1.4)	6.0(1.5)	5.1(1.5)	5.6(1.4)	6.2(1.1)	5.7(1.1)	2.8(2.0)	4.0(0.9)	5.6(1.1)	5.5(1.9)	5.5(1.6)	4.7(1.5)
Female with brother	Intact	77	6.6(1.3)	6.7(1.3)	6.3(1.1)	6.4(1.6)	6.2(1.3)	6.1(1.5)	5.7(1.5)	4.2(1.4)	4.2(1.5)	6.1(1.1)	6.4(1.2)	6.1(1.4)	5.3(1.1)
	Broken	21	6.1(1.3)	6.2(2.1)	6.0(1.5)	6.0(1.5)	5.8(1.9)	5.3(1.7)	4.9(1.6)	3.7(1.4)	4.1(1.4)	6.1(1.2)	5.7(1.5)	5.3(1.8)	4.3(1.7)
Male with brother	Intact	44	5.7(1.2)	5.6(1.1)	5.8(1.5)	6.1(1.1)	6.1(1.3)	6.1(1.1)	4.6(1.8)	3.8(1.4)	3.7(1.5)	5.4(1.1)	5.9(1.5)	5.8(1.1)	3.3(1.6)
	Broken	21	5.7(1.4)	6.6(1.4)	6.0(1.2)	6.6(0.9)	5.5(1.9)	6.1(1.6)	4.8(1.0)	4.4(1.8)	4.3(1.5)	6.1(2.2)	6.2(1.5)	6.0(0.7)	4.9(1.0)
Female with both	Intact	54	6.4(1.3)	5.9(1.5)	5.3(1.6)	6.5(1.3)	5.8(1.6)	5.7(1.7)	5.5(1.4)	4.2(1.7)	3.9(1.5)	5.8(1.9)	5.9(1.4)	5.3(1.7)	4.6(1.7)
	Broken	25	6.2(1.5)	6.1(3.2)	5.6(1.8)	6.5(1.2)	5.8(1.2)	5.6(1.8)	5.7(1.5)	4.3(1.6)	4.1(1.5)	5.7(1.5)	5.6(1.8)	5.6(1.7)	5.1(1.4)
Male with both	Intact	29	5.9(1.2)	5.5(1.6)	5.9(1.8)	5.7(1.5)	5.3(1.6)	6.4(1.3)	4.9(1.4)	4.3(1.8)	4.0(1.3)	5.1(2.0)	5.6(1.3)	6.2(1.5)	3.8(1.4)
	Broken	20	6.7(0.7)	6.3(1.1)	6.2(1.3)	7.2(1.1)	6.4(1.7)	7.0(1.3)	5.1(1.9)	4.9(1.3)	6.3(2.2)	6.3(1.1)	6.7(0.7)	4.6(1.7)	4.2(1.1)

9.4.7 Multiple Regression Analysis

In order to further explore the relationship between psychological distress, the sibling sex constellation, and the listed psychosocial variables Multiple Regression Analysis was used. Because the analysis was exploratory the stepwise method of MRA was used. Again for sibling sex constellation to be used in MRA it first had to be recoded into a set of seven dummy variables representing the range of combinations across categories of the sibling sex constellation variable. There were 8 categories in this variable reflecting $N-1=7$ possible combinations based on female with sister as the base category. This was chosen since in much of the analysis presented above this seems to be the category that is positively indicated in terms of variables measured. The dummy variables were: 1) female with sister compared with female with brother, 2) female with sister compared with male with sister, 3) female with sister compared with male with brother, 4) female with sister compared with female singleton, 5) female with sister compared with male singleton, 6) female with sister compared with female with both brother and sister, and 7) female with sister compared with male with both brother and sister.

On the first step psychological distress was the dependent variable and the outcome of this analysis is shown in Table 9.6.

Optimism, achievement motivation, perceived control, pessimism, avoidance coping, rational coping, female with sister compared with female with both brother and sister, female with sister compared with female with brother, female with sister compared with male singleton, and intact/non-intact home, were all direct predictors of psychological distress, accounting for 36% of the variance.

Optimism was then entered as the dependent variable in the next step of the MRA (Table 9.7) and was predicted by social support, achievement motivation, perceived control, rational coping, emotion coping, avoidance coping, family personal growth, female with sister compared with female with brother, female with sister compared with male with brother, female with sister compared with male with both brother and sister,

and female with sister compared with female with both brother and sister, accounting for 45% of the variance.

On the next step achievement motivation was entered as the dependent variable (Table 9.8) and was directly predicted by social support, problem-solving style, perceived control, emotion coping, rational coping, family personal growth, family relations, female with sister compared with female with brother, female with sister compared with female singleton, female with sister compared with male with both brother and sister, female with sister compared with male with sister, and socioeconomic status. These variables combined accounted for 44% of the variance.

Family relations was predicted by family systems maintenance, family personal growth, intact/broken home, female with sister compared with female with both brother and sister, and female with sister compared with male with brother. These variables accounted for 30% of the variance (Table 9.9).

Table 9.6: The significant predictors of Distress from Multiple Regression Analysis.							
Variable	Beta value	R2	R2 Change	F value	B(95% confidence limits for B)	Probability <	Dependent variable
Optimism	-.25	.12	.12	78.6	-.20(-.27 to -.12)	.001	Distress
Achievement motivation	.25	.14	.02	46.9	.37(.24 to .49)	.001	
Perceived control	-.10	.18	.04	26.1	-.16(-.26 to -.05)	.01	
Avoidance coping	.23	.22	.04	27.1	.19(.11 to .27)	.001	
Rational coping	-.19	.23	.01	24.3	-.11(-.17 to -.05)	.001	
Female with sister compared with female with both	.32	.29	.06	28.1	.277(2.16 to 3.39)	.001	
Female with sister compared with female with brother	.32	.33	.04	31.9	2.56(1.86 to 3.23)	.001	
Female with sister compared with male singleton	.11	.34	.01	29.6	1.06(.35 to 1.77)	.01	
Broken home	.09	.36	.02	25.9	.55(.12 to .99)	.01	

Table 9.7: The significant predictors of Optimism from Multiple Regression Analysis.							
Variable	Beta value	R2	R2 Change	F value	B(95% confidence limits for B)	Probability <	Dependent variable
Social support	.43	.21	.21	152.2	.87(.72 to 1.03)	.001	Optimism
Achievement motivation	.24	.23	.02	85.9	.46(.33 to .59)	.001	
Perceived control	.13	.24	.01	60.8	.24(.13 to .35)	.001	
Rational coping	.10	.38	.04	90.1	.07(.01 to .14)	.001	
Emotion coping	.17	.40	.02	78.1	.18(.09 to .27)	.05	
Avoidance coping	.09	.41	.01	66.8	-.09(-.18 to -.01)	.001	
Family Personal Growth	.12	.43	.02	52.9	.07(.03 to .11)	.001	
Female with sister compared with female with brother	.37	.47	.04	55.9	3.63(2.93 to 4.34)	.001	
Female with sister compared with male with brother	.25	.49	.02	55.9	2.91(2.16 to 3.65)	.001	
Female with sister compared with male with both	.16	.51	.02	54.0	2.18(1.35 to 2.99)	.001	
Female with sister compared with female with both	.17	.53	.02	53.8	1.86(1.19 to 2.53)	.001	
Broken home	-.08	.54	.01	50.7	-.60(-1.06 to -.14)	.01	
Socioeconomic status	.07	.55	.01	47.8	.10(.02 to .18)	.05	

Table 9.8: The significant predictors of Achievement Motivation from Multiple Regression Analysis.

Variable	Beta value	R2	R2 Change	F value	B(95% confidence limits for B)	Probability <	Dependent variable
Social support	.23	.20	.20	146.3	.25(.16 to .34)	.001	Achievement motivation
Problem-solving style	.26	.27	.07	107.3	.34(.23 to .45)	.001	
Perceived control	-.08	.29	.02	76.2	-.08(-.14 to -.01)	.001	
Emotion coping	-.19	.30	.01	60.7	.11(.05 to .16)	.01	
Rational coping	.19	.31	.01	51.2	.07(.03 to .09)	.001	
Family Personal Growth	.17	.35	.04	34.4	.05(.03 to .08)	.001	
Family relations	.14	.36	.01	32.8	.09(.03 to .14)	.001	
Female with sister compared with female with brother	.17	.39	.03	32.1	.90(.49 to 1.32)	.001	
Female with sister compared with female singleton	.13	.41	.02	32.6	.88(.43 to 1.34)	.001	
Female with sister compared with male with both	.08	.42	.01	30.8	.59(.12 to 1.06)	.01	
Female with sister compared with male with sister	.11	.43	.01	29.2	.62(.20 to 1.03)	.001	
Socioeconomic status	-.11	.44	.01	28.5	-.08(-.13 to -.03)	.001	

Table 9.9: The significant predictors of Family Relations from Multiple Regression Analysis.							
Variable	Beta value	R2	R2 Change	F value	B(95% confidence limits for B)	Probability <	Dependent variable
Family Personal Growth	.45	.24	.24	188.7	.22(.19 to .25)	.001	Family relations
Family Systems Maintenance	.07	.25	.01	98.1	.09(.02 to .19)	.05	
Broken home	-.09	.26	.01	67.9	-.59(-1.06 to -.12)	.01	
Female with sister compared with female with both	.14	.28	.02	55.0	.1.32(.67 to 1.96)	.001	
Female with sister compared with male with brother	.12	.30	.02	47.1	1.24(.51 to 1.94)	.001	

9.5 Discussion

The first aim of the current study was to replicate Study 1 with regards to the effects of sibling sex constellation psychological distress, the measured psychosocial variables associated with the stress process (social support, locus of control, optimism, and pessimism) and the family environment. In addition this study aimed to explore the effects of sibling sex constellation on three other important psychosocial correlates of psychological distress and adjustment, achievement motivation, problem solving style, and coping styles. Achievement motivation is important because it is related not only to psychological distress but also to work and career development. Problem-solving style and coping styles are more directly related to the behaviours undertaken to deal with life stress and the resulting impact on the individual. The second aim of this study was to assess both the parental marital status (intact versus non-intact home) relationship with distress, and the interactions between parental marital status and sibling sex constellation on distress levels, in a non-student adult sample. Finally, the third aim was to explore interactions between parental marital status (intact versus non-intact home) and sibling sex constellation on the psychosocial variables described above (social support, locus of control, optimism, pessimism, achievement motivation, problem solving style and coping style) and the family environment.

In this discussion the findings regarding the impact of sibling sex constellation will be discussed first; the impact upon distress levels, all the measured psychosocial variables, the family environment, and the additional aspects of the coping process. Following this the interactions between sibling sex constellation and parental relationship status will be explored on all of the variables as listed above, and the possibility of sibling sex constellation having mediating or moderating effects on the impact of parental separation in an adult sample will also be explored.

9.5.1 Effects of sibling sex constellation on adjustment

Although the results showed no main effect for participant's sex on distress levels, there was a significant main effect of sex of siblings on psychological distress. Participants

with both a brother and sister reported the highest levels of psychological distress, while those with only a sister reported the lowest levels of distress. When the sex of the participant and the sex of their siblings were combined in a sibling sex constellation variable, as in Study 1, the results showed a significant main effect for this variable on psychological distress. The protective nature of female siblings was again highlighted, particularly for males, as males with sisters, and males with both sisters and brothers were among the three lowest distress levels, along with females with sisters. Conversely participants of both sexes with only brothers reported high distress levels. These findings clearly replicate those of Study 1 and therefore further serve to demonstrate not only the impact of sibling sex on individual's distress levels but also the protective nature of female siblings and the negative effects of male siblings.

9.5.2 Effects of sibling sex constellation on psychosocial factors related to distress

In the current study there were no main effects for participant sex on any of the variables except for achievement motivation; whereby males scored higher than females. There were, however significant main effects of sibling sex on all variables and significant main effects of sibling sex constellation (participant sex and sex of siblings combined) on all variables.

9.5.2.1 *Social support*

The protective effect of female siblings was particularly pronounced in the case of perceived social support; participants of both sexes with sisters reported the highest levels of available support whilst participants of both sexes with brothers reported the lowest levels. This finding is in slight contrast to Study 1 whereby the sex of the participant interacted with the sex of the siblings; in Study 1 females reported more social support and therefore the combination of female participants with female siblings reported the highest levels of social support. Whilst the finding in Study 1 supported previous literature; female sibling dyads and mixed sex dyads have been found to be more prosocial to each other than male dyads (Tucker, Barber, & Eccles, 1997; Abramovitch, Pepler, & Corter, 1982), the current finding; that the presence of female

siblings is related to increased social support for both sexes, is as yet uncorroborated in the literature.

9.5.2.2 *Perceived locus of control*

The effects of sibling sex constellation upon locus of control were in direct opposition to the findings in Study 1. Although male participants reported a stronger internal locus of control, as in Study 1, in the current study there was no significant main effect for participant sex on locus of control. In direct opposition to the findings regarding locus of control in Study 1 (whereby participants with both brothers and sisters reported the most internal locus of control and singletons reported the most external), in the current study males and females with both brothers and sisters reported the most external locus of control and singletons of both sexes reported an internal locus of control; suggesting that having a number of siblings, particularly of both sexes, reduces perceived control for individuals. Therefore, although these findings further demonstrate that the number and sex of siblings had a greater effect upon perceived locus of control than the sex of the individual, they do not replicate the pattern found in study 1 regarding sibling sex constellation, and are in fact a reversal of the pattern found in Study 1. As the same scale was used in both studies this reversal is puzzling, but is perhaps due in some way to the use of a community sample (rather than student sample) in this study. The fact that locus of control had a similar relationship with psychological distress and the other psychosocial factors in this study suggests that it may well be a sampling effect.

9.5.2.3 *Optimism and Pessimism*

There were main effects for sibling sex constellation on both optimism and pessimism; singletons of both sexes reported substantially lower levels of optimism than all other categories and males and females with sisters reported the lowest pessimism levels. However the absence of a main effect of participant sex on optimism or pessimism, and the absence of any interaction effects of participant sex and sex of siblings on optimism or pessimism means that, in the current study, only the sex of participants' siblings affected their optimism and pessimism levels. When only sibling sex, and not the sex of

the participant, is considered participants with brothers report the highest optimism levels, followed by participants with both brothers and sisters, then participants with sisters and finally singletons. However it is only between singletons and the other categories that the differences are significant. Therefore although previous research regarding sex differences in optimism and pessimism has always been concerned with participant sex, it could be said that the current findings regarding optimism are partially supported by previous literature in that the presence of male siblings is associated with higher levels of optimism and in the literature males are associated with higher levels of optimism (Extremera, Duran, & Rey, 2007). However for pessimism the current findings are in no way supported by previous literature; participants with both brothers and sisters reported the highest levels of pessimism and those with sisters reported the lowest.

The main difference between this study and study 1 are in different sibling sex effects on control, optimism and pessimism. It has been suggested that these differences may reflect differences between a student sample and a general population sample and to some extent this is supported by the fact that these variables have similar relationships with psychological distress and with other psychosocial variables in both studies. In addition the literature generally supports a strong link between perceived control and optimism/pessimism (Cassidy, 1999). This link is explained through the attributional process whereby individuals attribute causes for events in their life on three dimensions, internal-external (clearly a control dimension), stable-unstable and global-specific. Both these latter two dimensions are about future expectations and are therefore arguably subsumed within the construct of optimism-pessimism. Finding that both variables (control and optimism) differ across the studies in fact demonstrates consistency with previous literature.

9.5.2.4 *Achievement motivation*

The effect of sibling sex constellation on achievement motivation was measured for the first time in this study. There was a main effect of participant sex on achievement, with males scoring higher. This is in accordance with previous literature regarding

traditional sex roles; traditional sex role training leads to males having more achievement motivation than females (Carr & Mednick, 1988). There was also a main effect of sibling sex structure on achievement motivation; participants with sisters scored highest and participants with brothers scored lowest. When the sex of the participant and the sex of siblings are both taken into consideration participants of both sexes with sisters report the most achievement motivation and participants of both sexes with brothers the least. These findings together suggest that the presence of female siblings in some way increases achievement motivation, as it occurs across both sexes. It is possible that male participants with female siblings experience traditional sex role training, therefore having high levels of achievement motivation. Female participants with sisters may experience non-traditional sex role training, as a result of being an all female familial generation, and therefore also have high levels of achievement motivation. The finding that sibling sex effects achievement motivation is important because achievement motivation has been consistently linked in the literature to subjective well-being, and therefore psychological health (Diener, Suh, Lucas, & Smith, 1999; Cassidy, 2000b).

9.5.3 Effects of sibling sex constellation on perceptions of family environment

There was a main effect of participants' sex on all three second order factors of the Family Environment Scale (family relations, personal growth, and systems maintenance) with females reporting higher scores for all three. As in Study 1, there were main effects of sibling sex constellation on all three second order factors. Participants of both sexes with sisters reported high family relations scores, whilst participants of both sexes with brothers reported the lowest. Therefore with regards to family relations the findings of the current study support those of previous research, and replicate those of Study 1, suggesting that female siblings increase cohesion and expressiveness, whilst decreasing conflict (Weiss, Schitaffino, Ilowite, 2001). In contrast to Study 1 however, for both the personal growth factor and systems maintenance there was little discernable pattern with regards to sibling sex constellation; instead females generally appeared to report higher levels of both personal growth and systems maintenance.

9.5.4 Effects of sibling sex constellation on aspects of the coping process

In addition to the psychosocial variables above, this study aimed to explore any effects of sibling sex constellation upon two different aspects of the coping process. The two aspects tested in this study were problem solving style and coping style, both representing different stages of the coping process. Problem solving style is the process by which individuals identify effective coping strategies, and is therefore part of the appraisal process whilst coping styles refer to the coping strategies favoured by the individual and therefore form the response to a stressor.

9.5.4.1 Problem solving-style

There was no main effect of participant sex on problem solving style. However there were main effects for sibling sex and for sibling sex constellation on problem solving style; participants of both sexes with sisters scored highest, therefore having the most positive problem solving style, and participants of both sexes with brothers scored lowest, therefore having the most negative or least positive problem solving style. It is particularly clear then that for problem solving style, the presence of female siblings is a positive influence, and the presence of male siblings is a negative influence. As positive problem solving styles are thought to lead to effective problem solving skills, therefore reducing distress levels (Cassidy, 1999), the finding that sibling sex constellation has an effect upon problem solving styles is an important one.

9.5.4.2 Coping style

Participant sex had a main effect on rational coping and avoidance coping; two of the three second order factors on the COPE. In both cases females scored higher than males. Sibling sex structure had a main effect on all three second order factors; Rational coping, avoidance coping, and emotion coping. For all three second order factors singletons scored lowest and participants with brothers scored highest. When both the sex of the participant and the sex of their siblings was considered (the sibling

sex constellation variable) there were again main effects on all three second order factors. However, there seemed to be no discernable pattern across the two sexes for sibling sex structure; females in all sibling constellations except for singletons scored higher than males on all three factors.

9.5.5 Effects of sibling sex constellation on impact of parental separation

The final two aims of this study were to; 1) establish both the relationship between parental relationship status (intact versus non-intact home) and distress in a non-student adult sample, and the interactions between parental relationship status and sibling sex constellation on distress levels, and 2) to explore interactions between parental marital status (intact versus non-intact home) and sibling sex constellation on psychosocial variables associated with the stress process (social support, locus of control, optimism, pessimism, and achievement motivation), the family environment, and aspects of the coping process (problem solving style and coping style). The findings regarding these two aims will now be discussed respectively.

9.5.5.1 Effects of sibling sex constellation on psychological distress following parental separation

It was hypothesized that parental relationship status would have a main effect upon distress levels in this non-student adult sample, and that as a result sibling sex constellation would serve as a moderator in the relationship between parental separation and distress. It was also hypothesized that female siblings would be a protective factor against distress. The first hypothesis was supported; sibling sex constellation appeared to play a moderating role in the current study. The second hypothesis was not supported; the pattern was more complex than anticipated. The findings regarding each of the two hypotheses will now be discussed in turn.

There was a significant main effect of intact/non-intact home on psychological distress, with adult participants from broken homes reporting higher stress levels. This finding is in accordance with the literature (Maier & Lachman, 2000; Cherlin, Chase-Lansdale, & McRae, 1998) and supports the theory that the absence of a main effect in Study 1 was

due to the reported resilience of college students from broken homes (McIntyre, Heron, McIntyre, Burton, & Engler, 2003; Weiner, Harlow, Adams, & Grebstein, 1995). However, as a different measure was used to assess distress levels in this study it is also possible that the measure used in this study (the Brief Symptom Inventory) was more sensitive to the general distress commonly experienced by adults from broken homes, and that Laumann-Billings and Emery (2000) reported finding in a college student sample, than the measure used in Study 1 (the General Health Questionnaire). There were also significant interaction effects between sibling sex constellation and intact/non-intact homes on psychological distress. These findings together suggest that sibling sex constellation may operate as a moderator of the relationship between parental separation and psychological distress, unlike in Study 1 where it may have operated in a mediating role.

Although it was hypothesized that female siblings would be a protective factor in the relationship between parental separation and distress, as was clearly the case (at least for males) in Study 1, the pattern of findings in this study was somewhat more complex. Clearly participants in any sibling constellation had lower distress levels in intact homes than their counterparts in broken homes, except in the case of female singletons, who were substantially less distressed in broken homes than in intact homes. In broken homes the presence of any siblings of either sex appears to considerably reduce distress levels for males, whereas the presence of male sibling greatly increases distress levels for female participants. It would appear therefore that for males in broken homes siblings of either sex is a protective factor, and for females in broken homes male siblings are a potentiating factor; amplifying their risk of distress.

9.5.5.2 Effects of sibling sex constellation and parental separation on psychosocial factors associated with distress

There were no significant main effects of intact/non-intact homes on any of the psychosocial variables measured except for achievement motivation. However, as reported earlier, there were significant main effects of sibling sex constellation on all of the psychosocial variables. There were also significant interaction effects of intact/non-

intact homes and sibling sex constellation on social support, locus of control, optimism, and achievement motivation (but not pessimism). These findings suggest that sibling sex constellation might act in a moderating role between parental separation and achievement motivation, and a mediating role between parental separation and social support, locus of control, and optimism. The finding that sibling sex constellation may mediate the relationship between parental separation and both social support and optimism, is a replication of the tentative finding in Study 1. However, in the current study sibling sex constellation possibly mediated the relationship between parental separation and locus of control, whilst it may have played a moderating role in this relationship in Study 1. As these two studies are the first to explore these relationships any postulated explanations are necessarily tentative.

Regarding perceived available social support, in the current study participants from broken homes reported higher levels of social support than did participants from intact homes, except for singletons (of both sexes) and females with brothers. This does not accord with the literature, which would suggest that offspring from broken homes perceive the absence of a parent from their primary residence as reducing their support levels (Boyce, Rodgers, & Rose, 2002) and would therefore be expected to have lower social support levels than those from intact homes. It is clear in the current study, however, that the participants with siblings (except for females with brothers) have found some compensation for this loss. That this compensation does not occur for singletons suggests that it is the sibling relationship rather than any other that has compensated for any loss of support. This finding is supported to some degree by the literature; whereby siblings from separated families form a close bond, providing each other with more support than siblings in intact families (Milevsky, 2005; Milevsky & Levitt, 2005). The protective effects of siblings have only ever been found in children in relation to specific internalizing or externalizing behaviours, and only in disharmonious homes; leading researchers to postulate that sibling relationships provide protection for children against maladjustment only when necessary (Jenkins, 1992). The two studies presented in this thesis are the first to find this protective effect in adults.

Interestingly the effects of sibling sex on optimism levels reverse according to family status. In intact homes participants of both sexes with brothers or both brothers and sisters reported the highest levels of optimism, as was the case before parental status was taken into account. However, in broken homes although participants with siblings still scored higher than singletons, participants with brothers or both brothers and sisters reported the highest optimism levels, suggesting that male siblings increase optimism in intact homes and female siblings increase optimism in broken homes. It is possible that as males are reported in the literature as being more optimistic (Extemera, Duran, & Rey, 2007) the presence of male siblings in intact families increases optimism, but in broken homes, when individuals experience a reduction of optimism, female siblings' greater concern for family members (Colarossi & Eccles, 2000) and prosocial attitude towards siblings (Dunn, 2002) may increase optimism levels. This relationship between sibling sex constellation and optimism is important as optimism was a significant predictor of distress in both the current study and Study 1.

For achievement motivation in broken homes the sex of the participant appeared to play a more important role than sibling sex, which clearly played a more important role than participant sex in intact homes; whereby participants of both sexes with sisters scored highest whilst participants of both sexes with brothers scored lowest. In broken homes male participants in all constellations except for those with brothers scored higher than females in any sibling constellation. Again these findings suggest that the presence of female siblings increases achievement motivation, as was the case before parental status was taken into consideration. The importance of achievement motivation in the stress process was highlighted by the Multiple Regression Analysis; whereby it was found to be both a direct predictor of distress, and an indirect predictor of distress via optimism. The findings of the MRA also confirmed the positive effects of female siblings (particularly for females) upon achievement motivation. It is clear from the results of the analyses in the current study that achievement motivation is increased by the presence of female siblings and that achievement motivation, in turn, directly reduces distress and increases optimism; thus reducing distress indirectly.

9.5.5.3 Effects of sibling sex constellation and parental separation on the family environment

There were main effects for intact/non-intact homes on family relations and systems maintenance but not personal growth. As reported earlier there were main effects for sibling sex constellation on all three second order factors of the Family Environment Scale. There were also significant interaction effects between intact/non-intact homes and sibling sex constellation on all three dimensions. Therefore it would appear that not only is sibling sex constellation a possible moderator in the relationship between parental separation and family relations, and parental separation and systems maintenance, but is also a possible mediator in the relationship between parental separation and personal growth.

Although there was little discernable pattern for family relations, females tended to report stronger family relations than males did in broken homes. In fact female only familial generations (females and sisters, and female singletons) actually reported higher scores for family relations in broken homes than they did in intact homes, whereas all other constellations reported stronger family relations in intact homes. This finding means that, in the current study, females from an all female broken home have more family cohesion and expressiveness, and less conflict than any other constellations from broken homes or any constellations at all from intact homes. Indeed, when the first order factors of cohesion, expressiveness and conflict are considered, the presence of a sister increases cohesion and expressiveness and decreases conflict for females in broken homes, but the same effect occurs for males in intact homes. The presence of a brother, meanwhile, decreases cohesion and expressiveness for both sexes in broken homes, and reduces conflict for males (but not females) in broken homes. These findings accord with previous literature, which has shown that female siblings tend to increase cohesion and decrease conflict in the family (Weiss, Schitaffino, & Ilowite, 2001); in the current study that was the case for females in broken homes and males in intact homes. In the literature male siblings have been shown to have the reverse effect; decreasing cohesion and increasing conflict (Weiss et al., 2001). However, in the current study that was the case for females in broken homes but not for males in broken

homes, whereby brothers did decrease cohesion as expected but simultaneously decreased conflict, an unexpected finding at odds with the limited literature on siblings' effects upon the family environment.

9.5.5.4 Effects of sibling sex constellation and parental separation on aspects of the coping process

There was a main effect for intact/non-intact home on problem solving style and a main effect for sibling sex constellation on problem solving style. There were also interaction effects between intact/non-intact homes and sibling sex constellation on problem solving style, suggesting that sibling sex constellation might be a moderator in the relationship between parental separation and problem solving style. In both intact and broken homes participants of both sexes with sisters reported the most positive problem solving styles, and participants of both sexes with brothers reported the most negative problem solving styles. The MRA confirmed problem solving style as an indirect predictor of distress, operating via optimism and achievement motivation; both direct predictors of distress. These findings appear to confirm problem solving style's place in the appraisal process; the social problem solving process consists of two components, problem orientation, and problem solving skills (D'Zurilla, Maydeu-Olivares, & Kant, 1998). Problem orientation focuses on generalized expectancies and attributions and could therefore explain the influence upon optimism. The problem solving skills component of the problem solving process involves goal directed tasks; which could explain the influence upon achievement motivation; a positive problem solving style would increase a person's goal directed behaviour, thus increasing their achievement motivation.

There were main effects for intact/non-intact homes on rational coping and avoidance coping but not emotion coping. Participants from broken homes reported more use of both rational and avoidance coping than those from intact homes. This is in accordance with the literature, which suggests that the most common coping response to parental divorce is active cognitive coping (i.e. Sandler, Tein, & West, 1994; Armistead et al., 1990; Radovanoic, 1993), which can be likened to the COPE second order factor

rational coping. The use of avoidance coping as a response to parental divorce has been associated with negative outcomes in the literature (Armistead et al., 1990; Sandler, Tein, & West, 1994). As reported earlier, there were main effects of sibling sex constellation on all three COPE second order factors. The significant interaction effects between intact/non-intact homes and sibling sex constellation on all three second order factors suggests that sibling sex constellation might operate as a moderator for the relationships between parental separation and the use of rational coping, and between parental separation and avoidance coping, but as a link between parental separation and the use of emotion coping. Both rational coping and avoidance coping were direct predictors of psychological distress in the MRA. In addition all three COPE second order factors were indirect predictors of distress via optimism, and rational coping and emotion coping were both indirect predictors of distress via achievement motivation.

9.5.6 The contribution of sibling sex constellation to psychological distress

As in Study 1, Multiple Regression Analysis was used to explore the contribution of sibling sex constellation to the prediction of psychological distress, and how this contribution is affected by psychosocial factors. The female with sister category was shown to be a significant positive indicator of reduced distress, contributing 11% to the 36% of the variance in psychological distress explained by direct predictors in this data. This was in comparison to three of the other seven sibling constellations; females with both brothers and sisters, females with brothers, and male singletons, thus suggesting that females who have a sister are likely to have lower distress levels than those with brothers, those with both brothers and sisters, and male singletons.

The female with sister category also had an indirect effect on psychological distress through optimism (as in Study 1), achievement motivation, and family relations (again, as in Study 1). The female with sister category provided 10% of the variance in optimism explained by direct predictors in this data in comparison to both males and females with brothers and both males and females with brothers and sisters. The female with sister category also added 7% of the variance explained in achievement motivation (in comparison to females with brothers, female singletons, males with sisters, and

males with brothers and sisters) and 4% of the variance explained in family relations. Together, the findings of the MRA suggest that for a female the presence of a sister decreases psychological distress and increases their levels of optimism and achievement motivation; direct predictors of psychological distress, and family relations; in this sample an indirect predictor of distress via achievement motivation, therefore having both a direct and indirect impact upon psychological distress.

9.6 Conclusion

As expected following the results of Study 1, there was a significant main effect of sibling sex constellation upon distress; this finding clearly replicated Study 1 and further demonstrated the protective impact of female siblings and the negative impact of male siblings upon distress levels. There were also significant main effects of sibling sex constellation (participant sex and sex of siblings combined) on all measured variables; social support, locus of control, optimism, pessimism, achievement motivation, problem solving style, all three second order factors of the COPE (rational coping, emotion coping, and avoidance coping), and all three second order factors of the Family Environment Scale (Family relations, personal growth, and systems maintenance). Female siblings were generally highlighted as having a positive effect upon all of these variables.

Parental relationship status did have a main effect upon distress levels in this non-student adult sample and, as a result, sibling sex constellation looked as if it might be a moderator in the relationship between parental separation and distress. Siblings of either sex appeared to act as a protective factor for males in broken homes, whilst male siblings appeared to be a potentiating factor for females in broken homes; amplifying their risk of distress. The results suggested that sibling sex constellation may have acted in a moderating role between parental separation and achievement motivation, systems maintenance, and family relations, and a mediating role between parental separation and social support, locus of control, optimism, and personal growth; again with female siblings tending to have a positive influence.

The effects of sibling sex constellation on two aspects of the coping process were explored for the first time in this study; problem solving style and coping style. Sibling sex constellation looked as if it might be a moderator in the relationship between parental separation and problem solving style, rational coping, and avoidance coping, and between parental separation and the use of emotion coping. The findings of the current study further emphasize the importance of sibling sex constellation for individual adjustment in both intact and non-intact homes.

10 Studies 1 & 2: Further analysis

The two studies presented provide a sequential test of the main aims based on two rich datasets. In reviewing the literature a number of questions were raised about the impact of family break up which are additional but related to the main focus of the research and these relate to, a) where the participant resided after the break up, b) the age of the participant when the break up occurred, and c) the amount of contact between the participant and the absent parent after the break up. The current data sets provide an opportunity to look at these issues and this analysis is presented here as an adjunct to the main studies.

10.1 Age at break up, parent lived with, and level of contact in study 1

The age of the participant at the time of separation was categorised into early childhood; 0-5 years (n=67), middle childhood; 6-10 years (n=96), and adolescence; 11-18 years (n=126). Level of contact was categorised into no contact (n=86), irregular contact (n=52), and weekly contact (n=151). Irregular here included less than once a month up to approximately once per year. The sample were divided by who they lived with after break up into mother (n=260), father (n=9), and neither (n=20). A multivariate analysis of variance (Manova) was used with these three independent variables and the dependent variables of psychological distress, social support, perceived control, optimism, pessimism, family systems maintenance, family personal growth, and family relations. The descriptive data for this analysis is shown in Table 10.1.

Table 10.1: Means and standard deviations for independent variables categorised by age of parental separation, level of contact with absent parent, and parent lived with after separation, for participants from non-intact homes in Study 1.

	Age of separation			Level of contact			Parent lived with		
Variable	0-5 yrs (N=67)	6-10 yrs (N=96)	11-18 yrs (N=126)	No contact (N=86)	Irregular (N=52)	Weekly (N=151)	Neither (N=20)	Mother (N=260)	Father (N=9)
	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)
Distress	9.8 (3.2)	13.7 (6.7)	16.2 (7.2)	14.1 (6.9)	17.6(9.9)	12.5(4.4)	12.2(4.4)	14.2(6.8)	8.0(4.7)
Social support	7.6(2.0)	7.3 (2.7)	7.1 (1.7)	7.3 (2.5)	6.9 (1.6)	7.4 (2.1)	6.9(1.7)	7.3(2.2)	7.5(1.3)
Locus of control	5.2 (2.4)	4.6 (2.3)	6.3 (2.8)	5.4 (2.8)	5.9 (2.1)	5.4 (2.7)	6.9(2.7)	5.3(2.6)	7.6(1.4)
Optimism	8.8 (1.9)	10.5 (3.5)	9.8 (2.9)	9.4 (2.9)	9.7 (3.5)	10.1 (2.9)	8.9(2.1)	9.9(3.1)	9.7(1.7)
Pessimism	6.1 (2.7)	7.2 (3.4)	6.5 (2.9)	6.4 (2.9)	6.2 (3.4)	6.9 (2.9)	7.3(2.9)	6.5(3.1)	8.2(2.4)
Systems maintenance	7.8 (5.0)	11.1 (6.9)	7.1 (3.6)	8.2 (4.8)	8.2 (6.0)	8.9 (5.7)	6.6(3.7)	8.8(5.6)	7.7(5.6)
Personal growth	9.2 (3.5)	9.6 (3.3)	8.2 (2.1)	8.9 (2.6)	7.7 (2.0)	9.3 (3.3)	7.9(2.1)	9.0(3.0)	7.8(1.2)
Family relations	10.3 (2.5)	7.9 (3.6)	9.3 (2.5)	8.9 (3.0)	8.6 (3.3)	9.2 (3.0)	10.0(2.0)	8.9(3.1)	9.6(2.9)

There were significant main effects for age at breakup on psychological distress ($F(2,287) = 20.38, p < .001$), optimism ($F(2,287) = 3.98, p < .05$), perceived control ($F(2,287) = 9.23, p < .001$), family systems maintenance ($F(2,287) = 12.93, p < .001$), family personal growth ($F(2,287) = 2.96, p < .05$), and family relations ($F(2,287) = 14.54, p < .001$). Post Hoc analysis revealed that the lowest level of psychological distress was experienced where the parental separation had occurred before 5 years of age and this group also reported the highest scores on family relations. However this same age group (early childhood; 0–5 years) was associated with lowest levels of optimism. The participants in the oldest age category (adolescence; 11–18 years) had the highest levels of psychological distress and had the lowest scores for the personal growth dimension of the family environment scale. The middle childhood group (6–10 years) had the highest scores on optimism and the lowest perceived control. These effects are illustrated in Figure 10.1.

There were main effects for level of contact on psychological distress ($F(2,287) = 5.19, p < .01$), and family personal growth ($F(2,287) = 5.36, p < .01$). Post Hoc tests showed that those with irregular contact were significantly more distressed than either of the other categories and those with weekly contact had the lowest distress scores. Again those with weekly contact reported the highest levels of personal growth in their family and those with irregular contact the lowest. These effects are illustrated in Figure 10.2.

There were significant main effects for who the participant lived with on psychological distress ($F(2,287) = 3.41, p < .05$), pessimism ($F(2,287) = 2.88, p < .05$), and perceived control ($F(2,287) = 5.39, p < .01$). Post Hoc analysis shows that lowest levels of distress occurred in those who lived with their father however there were only 9 participants in this group. Participants living with mother showed the highest levels of psychological distress although the mean score would be within the normal range for the sample. Participants living with father showed the highest levels of perceived control but also reported the highest levels of pessimism. Given the small cell sizes for living with father and for neither it is difficult to draw any conclusions from this result. These effects are illustrated in Figure 10.3.

There were significant interaction effects for age at break up by level of contact on psychological distress ($F(4,287) = 3.68, p<.01$), and family relations ($F(4,287) = 3.11, p<.01$). These are illustrated in Figure 10.4 and 10.5.

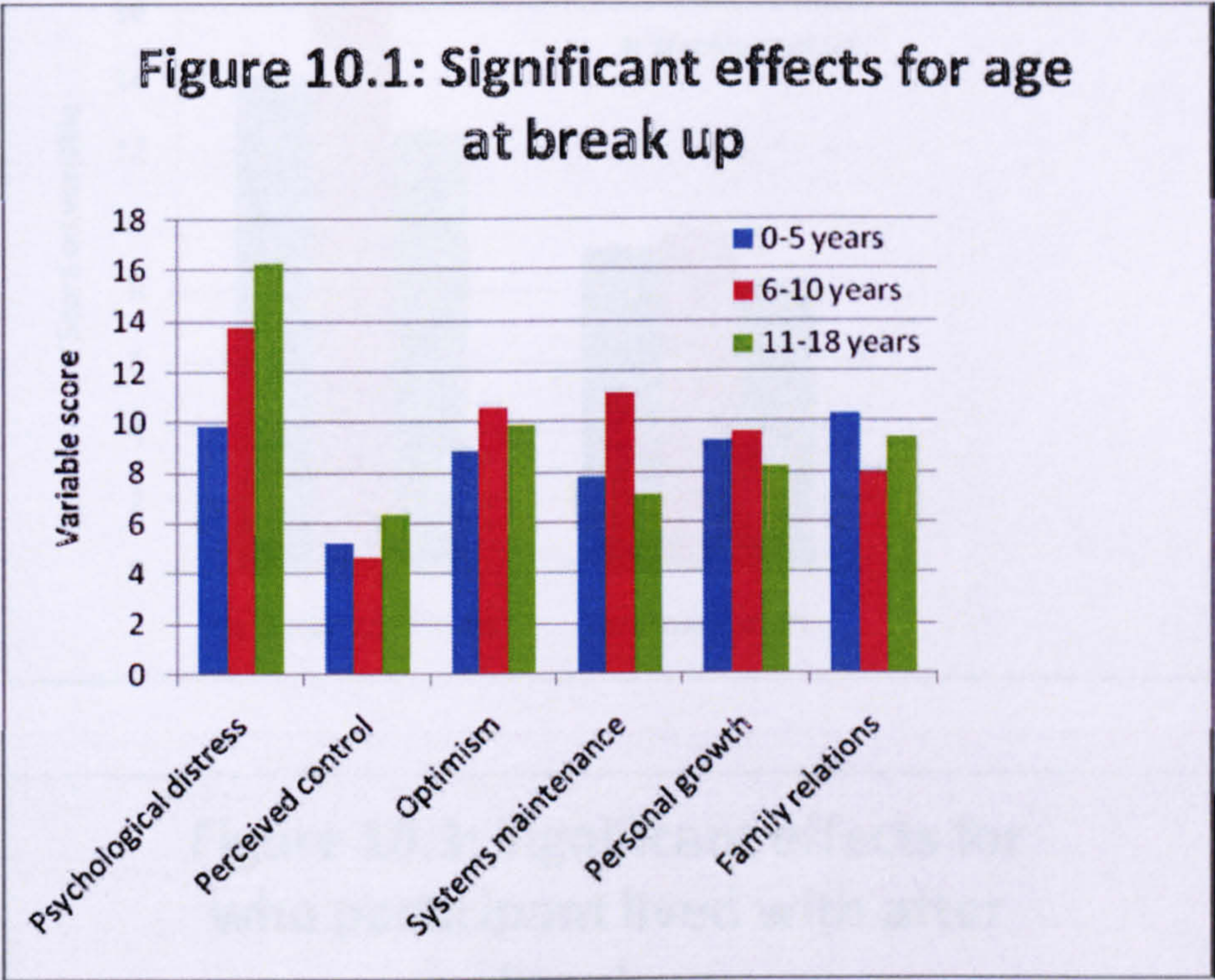


Figure 10.2: Significant effects for level of contact

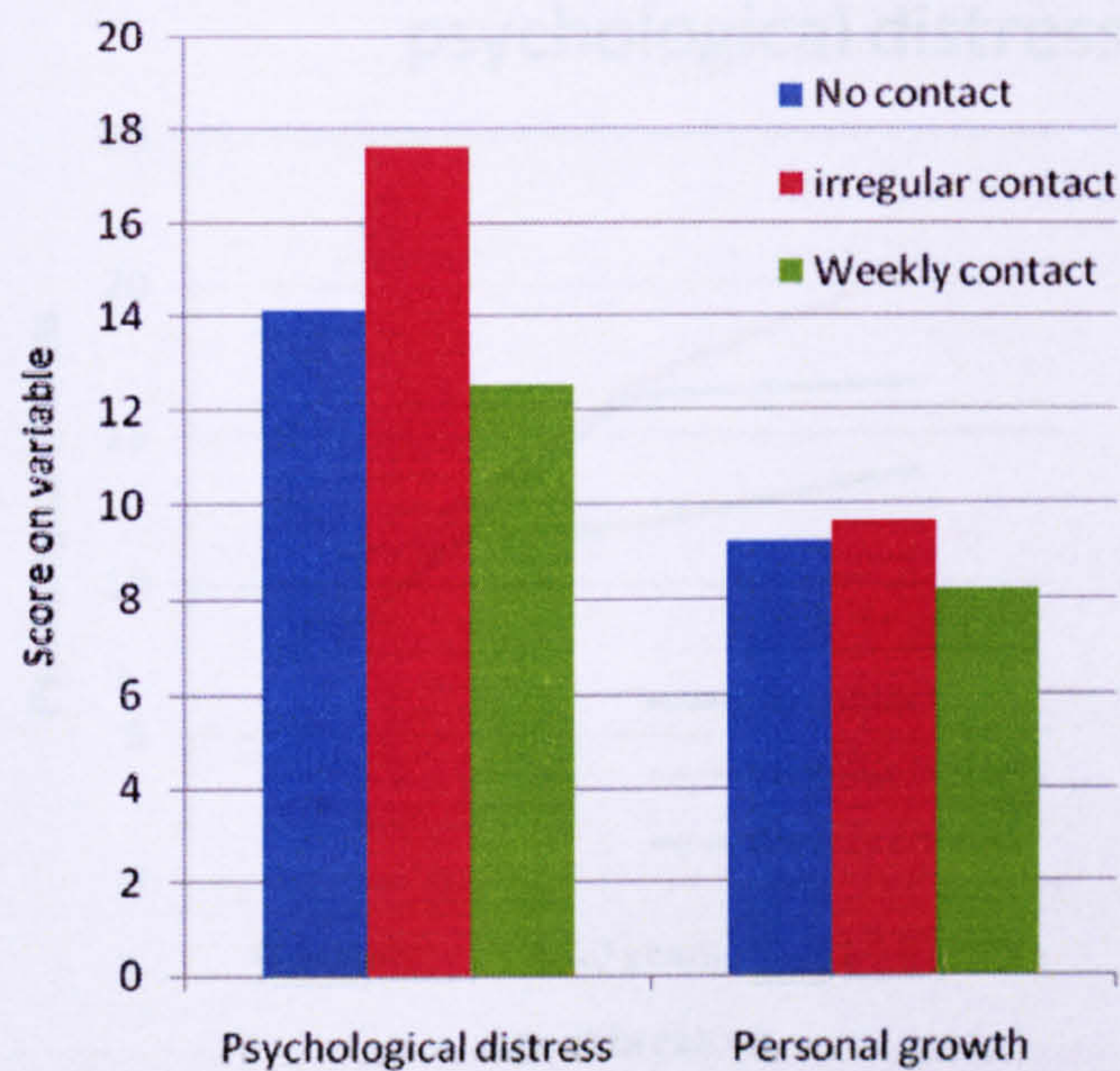


Figure 10.3: Significant effects for who participant lived with after break up

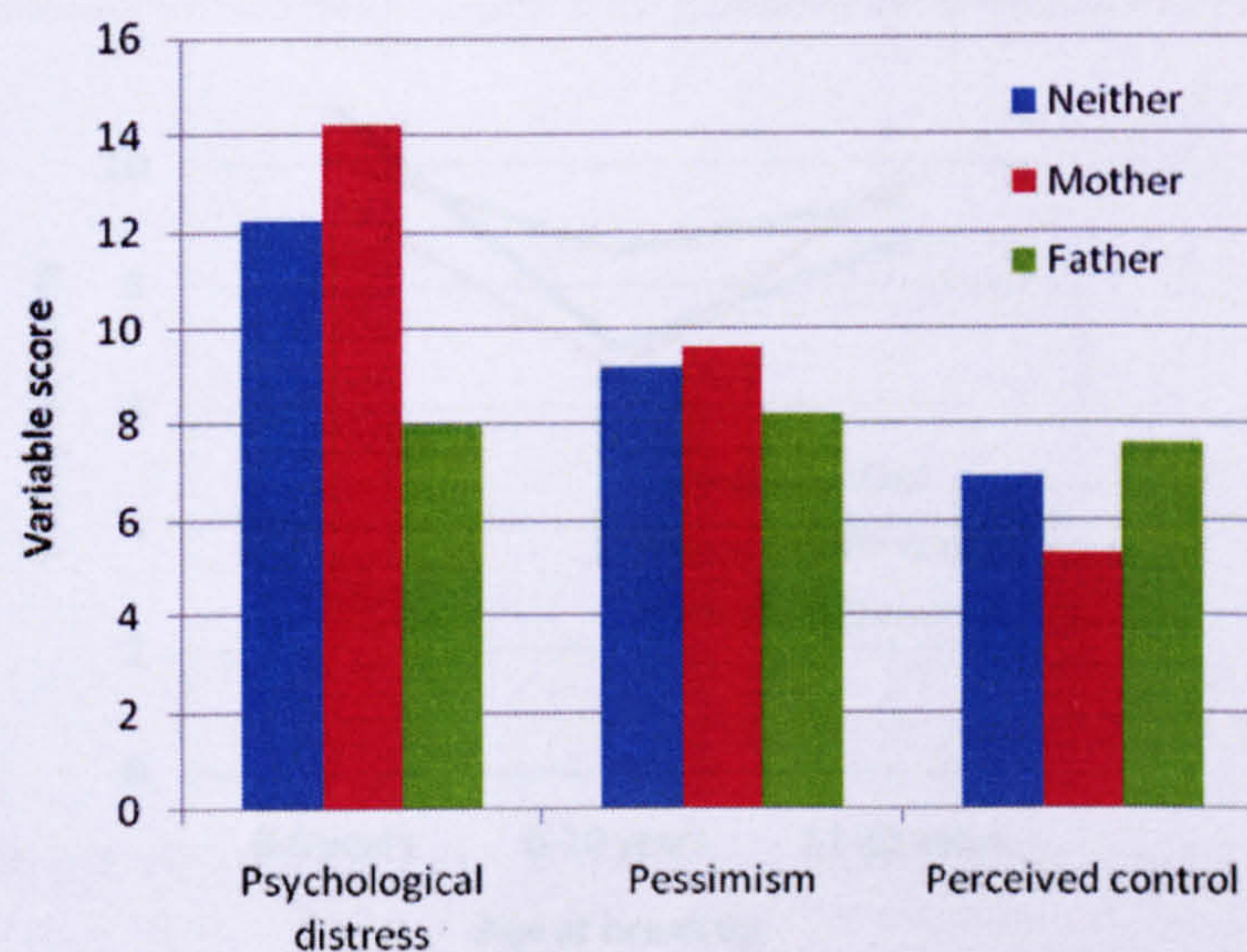


Figure 10.4: Interaction effects for age at break up by level of contact on psychological distress

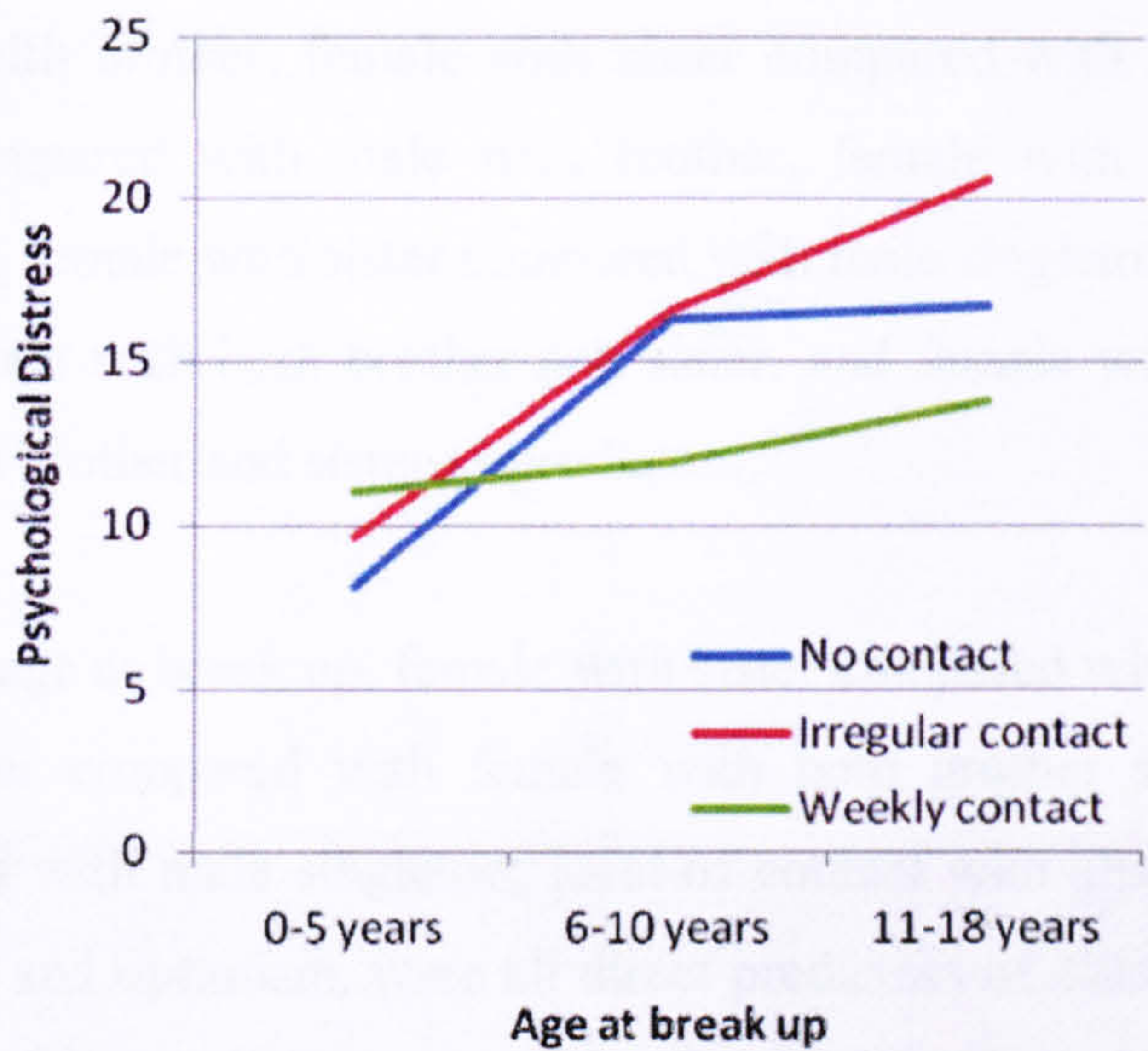
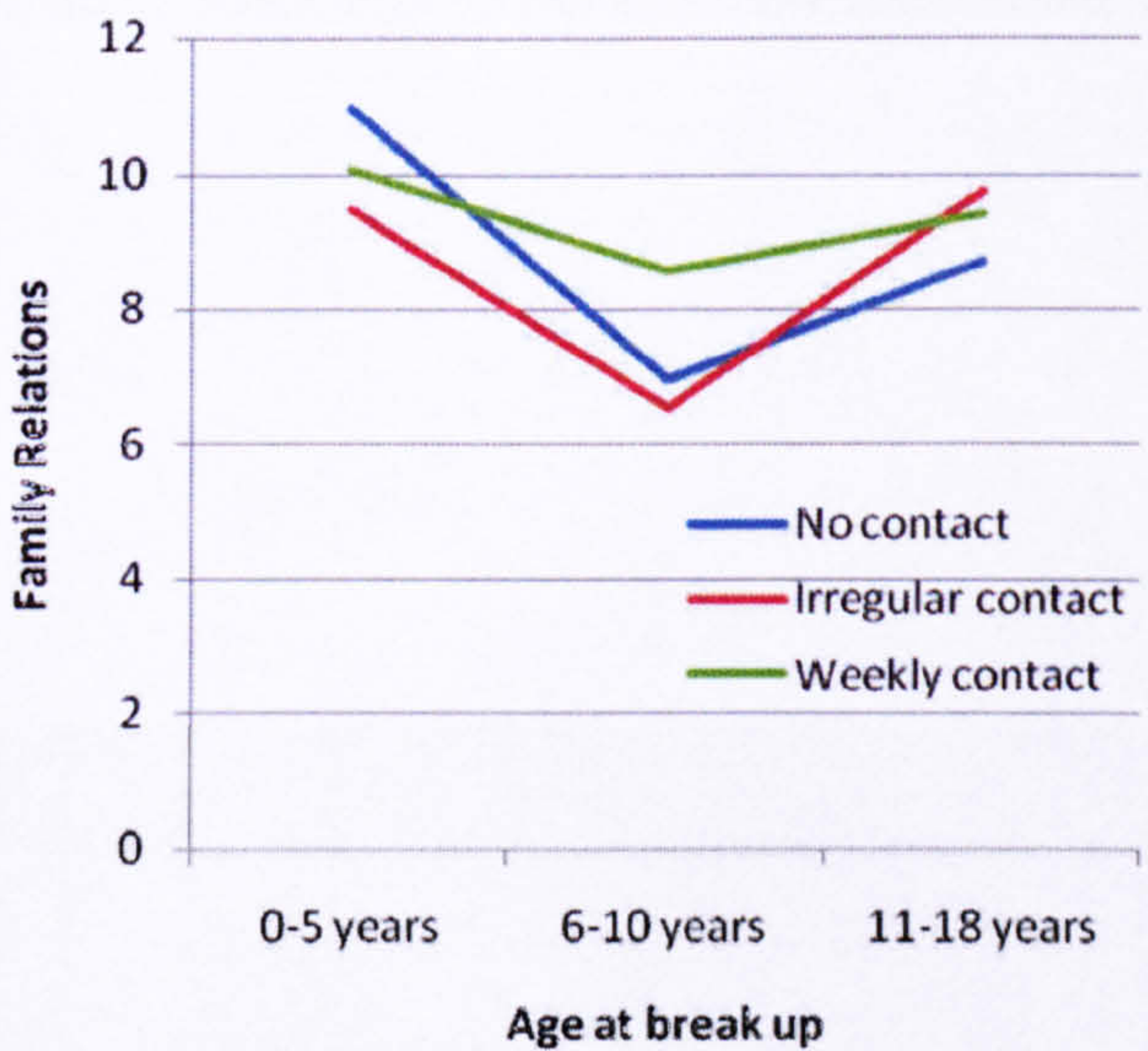


Figure 10.5: Interaction effects for age at break up by level of contact on family relations



In order to further explicate the relationships a multiple regression analysis (MRA) was used with psychological distress as the dependent variable and social support, perceived control, family relations, family systems maintenance, family personal growth, age at break up, amount of contact with absent parent, female with sister compared with female with brother, female with sister compared with male with sister, female with sister compared with male with brother, female with sister compared with female singleton, female with sister compared with male singleton, female with sister compared with female with both brother and sister, and female with sister compared with male with both brother and sister as predictors.

In effect age at break up, female with sister compared with female with brother, female with sister compared with female with both brother and sister, female with sister compared with male singleton, level of contact with absent parent, pessimism, family relations, and optimism, were all direct predictors of distress accounting for 47% of the variance. The mediating role of family relations is demonstrated in the fact that when family relations is entered as a dependent variable it is directly predicted by female with sister compared with female with brother, and age at break up, accounting for 10% of the variance. This supports the positive effect for females of having a sister which has been consistently demonstrated in both studies and the way this may have an impact on family relations. This is shown in Table 10.2.

Table 10.2: The significant predictors of psychological distress and family relations in those from non-intact homes from multiple regression analysis in Study 1.							
Variable	Beta value	R2	R2 Change	F value	B(95% confidence limits for B)	Probability <	Dependent variable
Age at break up	.44	.15	.15	48.8	.66(.51 to .82)	.001	Psychological distress
Female with sister compared with female with brother	.26	.23	.08	41.7	5.16(3.09 to 7.24)	.001	
Female with sister compared with female with both brother and sister	.24	.25	.02	31.3	3.91(2.38 to 5.44)	.001	
Female with sister compared with female singleton	.11	.27	.02	26.6	2.68(.21 to 5.14)	.05	
Level of contact with absent parent	-.12	.31	.04	24.8	-.92(-1.61 to -.22)	.01	
Pessimism	.32	.39	.08	25.8	.71(.50 to .92)	.001	
Family relations	-.24	.44	.05	27.7	-.53(-.74 to -.33)	.001	
Optimism	-.18	.47	.03	26.9	-.40(-.64 to -.17)	.001	
Female with sister compared with female with brother	-.29	.07	.07	22.9	-2.68(-3.71 to -1.67)	.001	Family relations
Age at break up	-.16	.10	.03	15.8	-.11(-.18 to -.03)	.01	

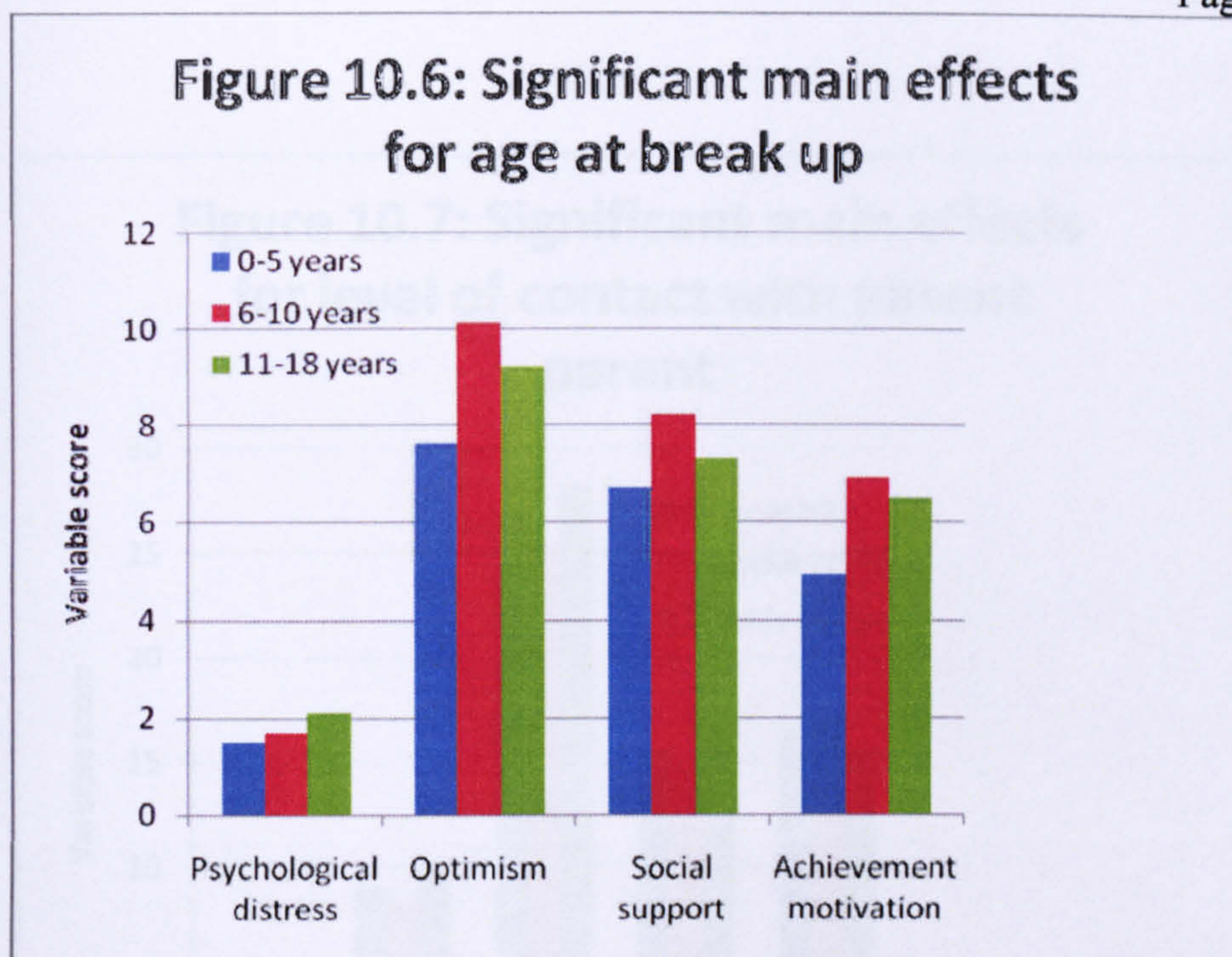
10.2 Age at break up, parent lived with, and level of contact in study 2

The age of the participant at break up, level of contact with absent parent, and which parent the participant lived with, were categorised as for study 1. The numbers in each category were; 1) age at break up, early childhood; 0-5 years (n=44), middle childhood; 6-10 years (n=62), and adolescence; 11-18 years (n=76); 2) level of contact; no contact (n=56), irregular contact (n=38), and weekly contact (n=88); 3) who they lived with after break up; mother (n=148), father (n=20), and neither (n=14). A multivariate analysis of variance (Manova) was used with these three independent variables and the dependent variables of psychological distress, social support, perceived control, optimism, pessimism, family systems maintenance, family personal growth, family relations, achievement motivation, problem-solving style, rational coping, emotion coping, and avoidance coping. The descriptive data for this analysis is shown in Table 10.3.

There were significant main effects for age at breakup on psychological distress ($F(2,181) = 8.62, p<.001$), optimism ($F(2, 181) = 22.53, p<.001$), social support ($F(2, 181) = 12.47, p<.001$), and achievement motivation ($F(2, 181) = 18.98, p<.001$). Post Hoc analysis revealed that those in the adolescent age group had significantly higher levels of psychological distress than either of the other two groups. The early childhood group had the lowest levels of distress but also showed significantly lower levels of social support, optimism and achievement motivation. This is consistent with study 1 effects and suggests something about those who experience family break up at a younger age. They appear less distressed but there may be other important psychosocial effects. These effects are illustrated in Figure 10.6.

Table 10.3: Means and standard deviations for dependent variables categorised by age of parental separation, level of contact with absent parent, and parent lived with after separation, for participants from non-intact homes in Study 2.

	Age of separation			Level of contact			Parent lived with		
Variable	1-5 yrs (N=44)	6-10 yrs (N=62)	11-18 yrs (N=76)	No contact (N=56)	Irregular (N=38)	Weekly (N=88)	Neither (N=14)	Mother (N=148)	Father (N=20)
	Mean(Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)	Mean (Sd)
Distress	1.5 (1.2)	1.7 (1.1)	2.1 (1.6)	1.9 (1.7)	2.6 (1.7)	1.5 (0.8)	1.9(1.9)	1.9(1.2)	1.4(2.0)
Social support	6.7 (2.8)	8.2 (1.6)	7.3 (2.2)	7.2 (2.4)	7.0 (2.4)	7.9 (2.0)	7.8(1.6)	7.6(1.9)	6.0(3.8)
Achievement motivation	4.9(2.8)	6.9(1.7)	6.5(1.6)	6.0(2.3)	6.7(1.5)	6.2(2.1)	6.0(0.8)	6.6(1.7)	4.0(3.5)
Problem solving style	7.3(1.0)	7.4(1.5)	7.2(1.2)	7.2(1.1)	7.0(1.2)	7.4(1.3)	7.0(1.6)	7.3(1.2)	7.1(1.2)
Optimism	7.6 (3.9)	10.1 (1.9)	9.2 (2.5)	8.9 (3.3)	8.2 (2.7)	9.7 (2.6)	9.4(1.8)	9.6(2.2)	5.5(5.1)
Pessimism	6.6 (2.4)	5.9 (2.4)	6.6 (2.6)	6.6 (2.6)	6.1 (2.3)	6.5 (2.6)	7.4(3.9)	6.5(2.4)	5.1(1.7)
Locus of control	5.5 (1.5)	5.0 (2.4)	3.9 (1.8)	4.7 (1.8)	4.2 (2.3)	4.8 (2.1)	3.9(2.1)	4.7(2.1)	5.0(1.2)
Rational coping	27.2(4.5)	27.5(4.9)	27.1(4.7)	26.9(4.6)	25.4(6.2)	28.3(3.7)	27.6(3.7)	27.5(4.4)	25.2(6.8)
Emotion coping	15.1(2.8)	14.5(4.0)	16.8(3.2)	15.5(3.6)	14.7(4.2)	16.2(3.2)	16.7(3.3)	15.8(3.5)	13.9(3.9)
Avoidance coping	16.5(2.9)	16.5(3.6)	16.6(3.6)	16.4(2.9)	17.2(3.2)	15.3(4.3)	16.4(2.2)	14.6(4.3)	16.8(3.3)
Systems maintenance	11.4 (2.2)	11.1 (2.3)	10.1 (2.9)	10. 6 (2.7)	9.6 (2.9)	11.2 (2.4)	10.7(1.9)	10.6(2.8)	11.2(1.7)
Personal growth	9.4 (3.2)	10.5 (1.9)	9.6 (3.7)	9.9 (3.0)	8.7 (3.3)	10.3 (3.0)	11.5(2.6)	9.8(3.3)	9.2(1.5)
Family relations	8.7 (2.9)	9.2(3.4)	7.9 (4.1)	8.7 (3.1)	6.6 (3.5)	9.2 (3.8)	9.4(1.8)	8.3(3.8)	9.6(3.1)



There were main effects for level of contact on psychological distress ($F(2,181) = 21.03, p < .001$), optimism ($F(2,181) = 8.81, p < .001$), rational coping ($F(2,181) = 10.44, p < .001$), emotion coping ($F(2,181) = 4.01, p < .05$), and avoidance coping ($F(2,181) = 8.45, p < .001$). Post Hoc tests showed that those with irregular contact were significantly more distressed than either of the other categories and those with weekly contact had the lowest distress scores. Those with weekly contact scored significantly higher on optimism, rational coping, and emotion coping, and lower on avoidance coping. These effects are illustrated in Figure 10.7.

There were significant main effects for who the participant lived with on optimism ($F(2,181) = 21.19, p < .05$), social support ($F(2,181) = 3.92, p < .05$), rational coping ($F(2,181) = 4.82, p < .01$), avoidance coping ($F(2,181) = 4.82, p < .001$), and achievement motivation ($F(2,181) = 10.97, p < .001$). Post Hoc analysis shows that lowest levels of optimism, social support, rational coping, and achievement motivation, occurred in those who lived with their father. Participants who had lived with father also had the lowest levels of distress as in Study 1, but this was not statistically significant. Given the small cell sizes for living with either father or neither parent it is difficult to draw any conclusions from this result. These effects are illustrated in Figure 10.8.

There were significant interaction effects for age at break up by level of contact on psychological distress ($F(4,181) = 3.67, p < .01$). These are illustrated in Figure 10.9.

**Figure 10.7: Significant main effects
for level of contact with absent
parent**

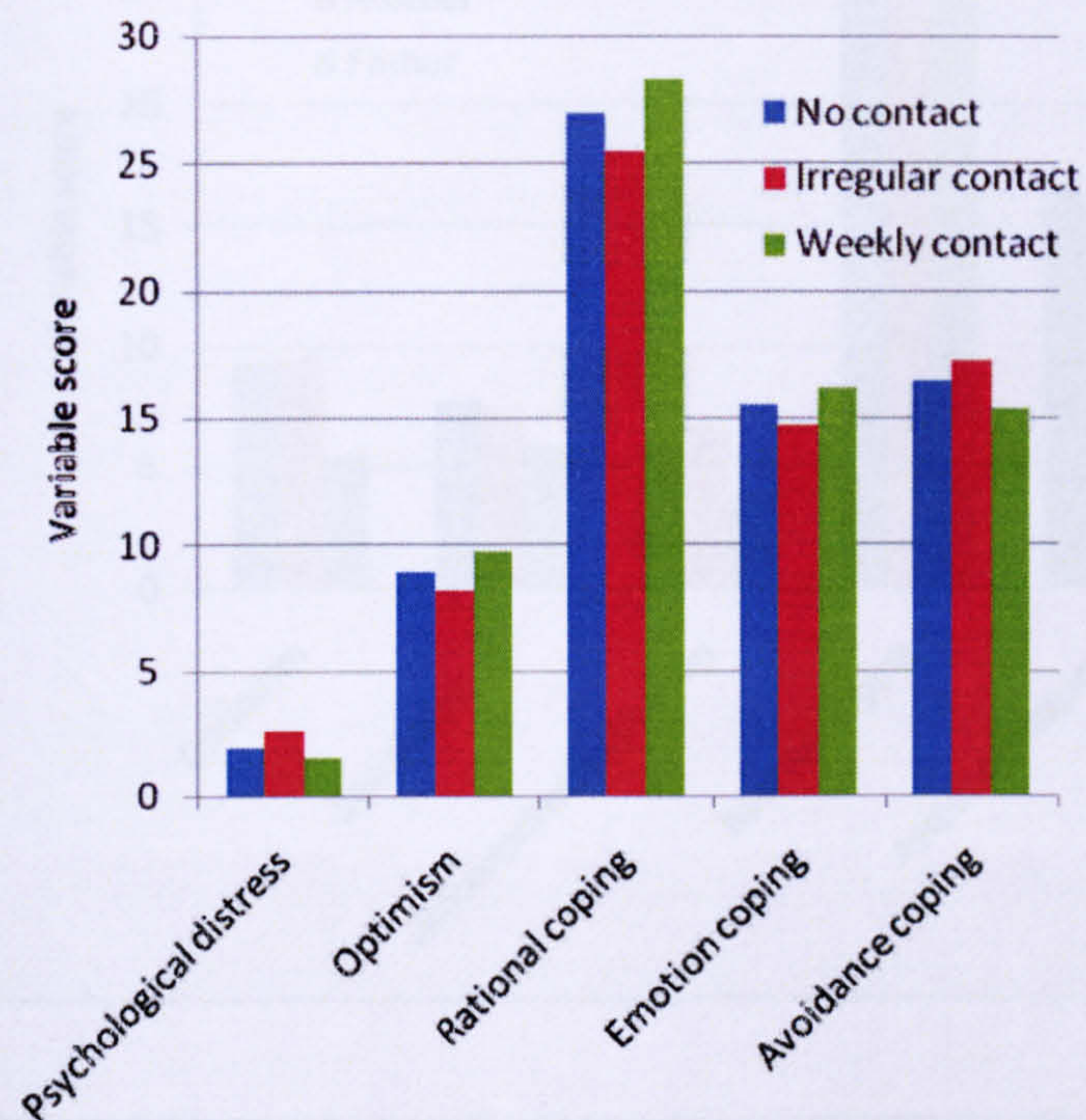


Figure 10.8: Significant main effects for who participant lived with after break up

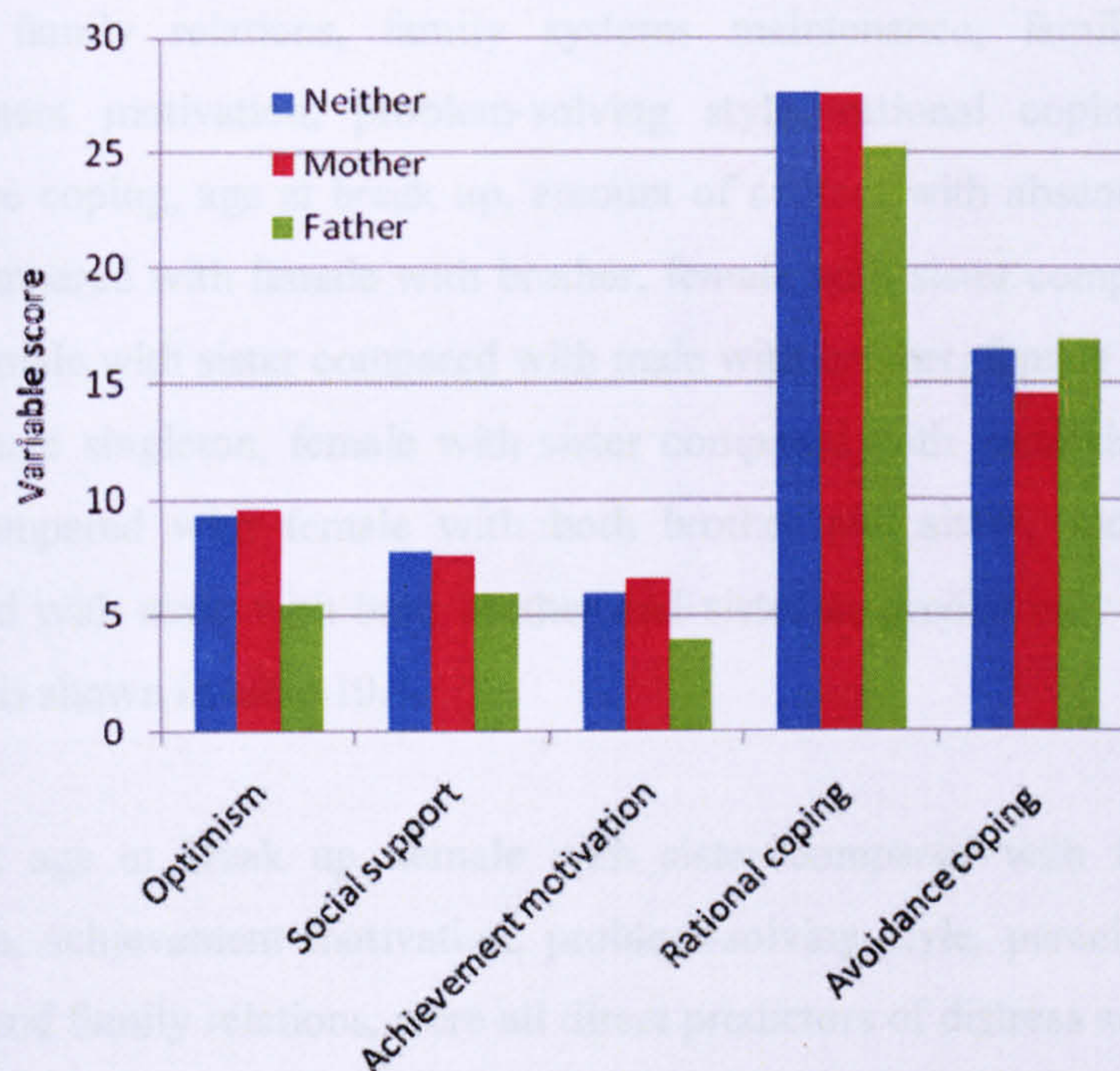
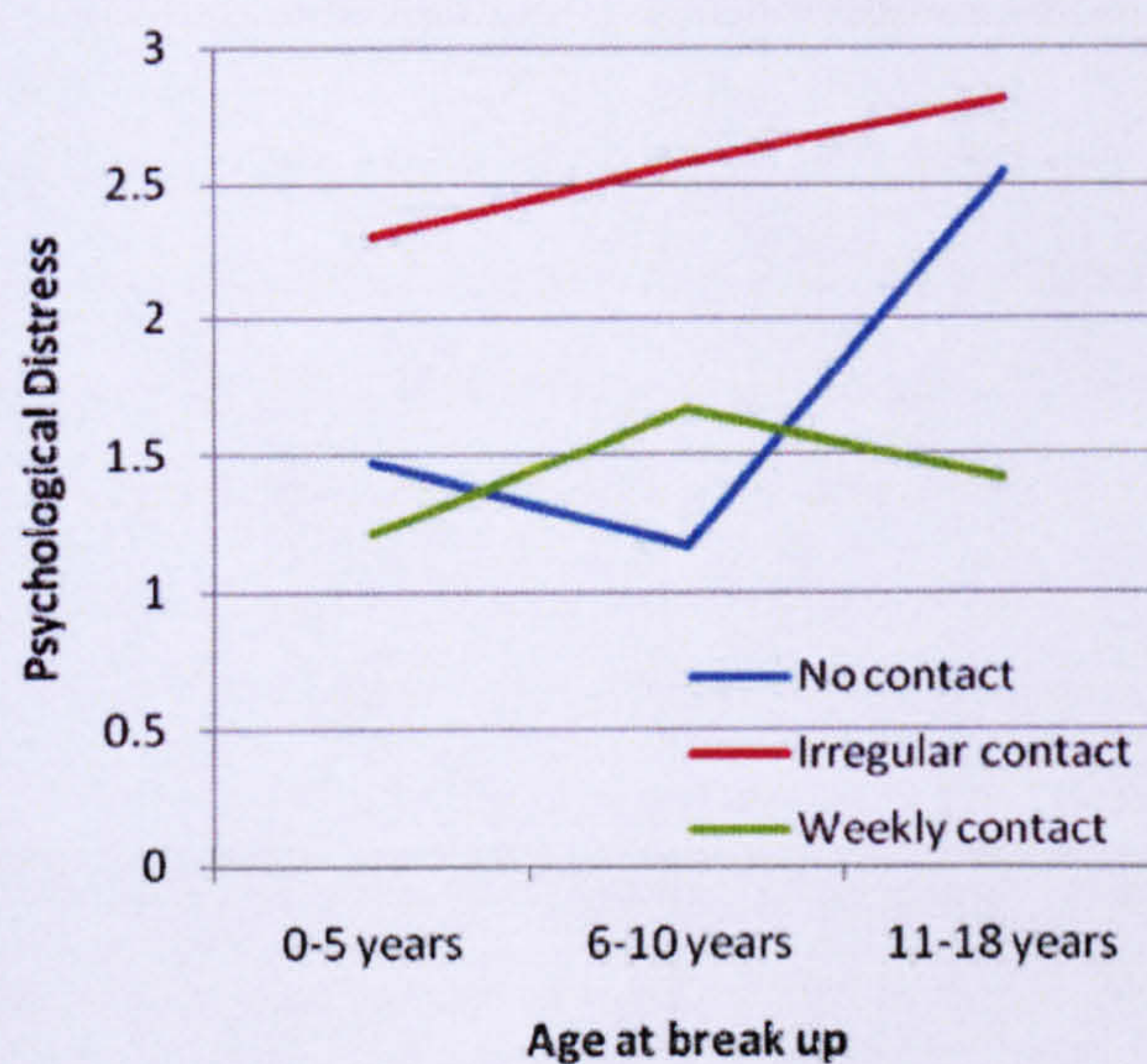


Figure 10.9: Interaction effects for age at break up by level of contact on psychological distress



In order to further explicate the relationships a multiple regression analysis (MRA) was used with psychological distress as the dependent variable and social support, perceived control, family relations, family systems maintenance, family personal growth, achievement motivation, problem-solving style, rational coping, emotion coping, avoidance coping, age at break up, amount of contact with absent parent, female with sister compared with female with brother, female with sister compared with male with sister, female with sister compared with male with brother, female with sister compared with female singleton, female with sister compared with male singleton, female with sister compared with female with both brother and sister, and female with sister compared with male with both brother and sister as predictors. The outcome of this analysis is shown in table 10.4.

In effect age at break up, female with sister compared with female with brother, optimism, achievement motivation, problem-solving style, perceived control, rational coping, and family relations, were all direct predictors of distress accounting for 48% of the variance. The mediating role of family relations is demonstrated in the fact that when family relations is entered as a dependent variable it is directly predicted by female with sister compared with female with brother, and female with sister compared with female singleton, accounting for 25% of the variance. This supports the positive effect for females of having a sister, which has been consistently demonstrated in both studies, and the way this may impact on family relations.

Table 10.4: The significant predictors of psychological distress and family relations in those from non-intact homes from multiple regression analysis in Study 2.							
Variable	Beta value	R2	R2 Change	F value	B(95% confidence limits for B)	Probability <	Dependent variable
Age at break up	.13	.06	.06	11.5	.04(.00 to .07)	.001	Psychological distress
Female with sister compared with female with brother	-.16	.11	.05	8,9	-.59(-1.04 to -.15)	.001	
Optimism	-.27	.23	.12	13.3	-.13(-.20 to -.06)	.001	
Achievement motivation	-.32	.29	.06	14.6	-.21(-.31 to -.12)	.05	
Problem-solving style	-.20	.34	.05	15.6	-.22(-.35 to -.09)	.01	
Perceived control	-.21	.38	.04	15.7	-.14(-.22to .92)	.001	
Rational coping	-.34	.46	.08	18.8	-.10(-.74 to -.06)	.001	
Family Relations	-.13	.48	.02	17.7	-.06(-.11 to -.01)	.001	
Female with sister compared with female with brother	.50	.22	.22	52.9	4.89(3.64 to 6.15)	.001	Family relations
Female with sister compared with female singleton	.17	.25	.03	30.5	1.42(.33 to 2.52)	.01	

10.3 Discussion

The additional analyses were carried out in order to assess the impact of the age of the participant at the time of parental separation, the level of contact that the participants had with the non-resident parent following the parental separation, and in particular to see if sibling sex constellation still had an impact when these variables were included. These will now be discussed in turn.

10.3.1 Effects of age at time of parental separation

In both samples the participants in the oldest age group at the time of parental separation (11-18 years) suffered from the highest levels of psychological distress, perhaps because they were more able to understand and identify with their parents' feelings at the time of separation. It is also possible that this level of understanding may have led the parents to believe that the children were too old to be negatively affected by their parents' relationship, which may, result in the triangulation of children; perceptually trapping the children, leading to considerable distress (Amato & Afifi, 2006). This finding, that adolescent participants at the time of parental separation suffered from the highest levels of psychological distress, is supported by the literature; which suggests that parental divorce during adolescence is particularly disturbing (Chase-Lansdale, Cherlin, & Kiernan, 1995; Cherlin, Chase-Lansdale, & McRae, 1998). This is thought to be either due to normative major transformations occurring in adolescence; such as the renegotiation of autonomy and connectedness with the family, or to the proximity of the parental divorce to young adulthood; increasing the likelihood of continuity of adverse reactions to the parental divorce into adulthood. In the sample from Study 1 the participants in this category (11-18) also reported the strongest internal locus of control and the lowest levels of personal growth and systems maintenance.

In both samples the participants in the youngest age group at the time of parental separation (1-5 years) had the lowest levels of optimism and, in the sample from Study 2, the lowest levels of social support and achievement motivation. As these participants reported the lowest distress levels in both samples these findings suggest that those who

experience parental separation at this young age are affected by parental separation, just as those who experience parental separation at later ages, but these effects are shown not in psychological distress but instead in other psychosocial variables implicated in both the stress process and general well-being. For example both optimism and achievement motivation are important in both day to day living (i.e. in the working environment) but also in both problem solving and coping skills, enabling an individual to cope with normative life events effectively. Interestingly the participants in this age group at the time of parental separation reported the highest scores for family relations. A possible explanation for this is that the resident parent may have attempted to compensate for the absence of the non-resident parent. This compensation (an increase in the level of parental investment) may have led to more positive family relationships which may subsequently have protected the children from the adult distress levels associated with parental separation. Research carried out with young children of separated parents has tended to focus on maladjustment indexed by internalizing and externalizing behaviours at the time, rather than their adult distress levels. Therefore relatively little is known about the specific impact of parental separation at a young age upon adult adjustment.

10.3.2 Effects of regularity of contact with the non-resident parent

With regards to the level of contact with the non-resident parent following parental separation the finding that sporadic contact is more detrimental than no contact at all accords with intuition; it is surely better for the child to know where they stand, rather than experience the extreme highs and lows of sporadic contact with the non-resident parent. Indeed, Laumann-Billings & Emery (2000) found a non-linear relationship between non-residential parent contact and the offspring's feelings of loss; the emerging adults in their sample (college students) who saw their non-residential parent occasionally reported more loss than those who saw them frequently or not at all. A variable of interest that was not included in this study that may also impact upon distress levels is the depth of relationship with the non-resident parent. Although the level of contact with the non-resident parent was measured, this cannot be assumed to imply depth of relationship, which may have a distinct effect upon adjustment.

Whether the child remained with mother or father or with neither after separation is also of interest in this context however the distribution was heavily skewed with most children remaining with mother. It is therefore important not to speculate too much about the finding that those who lived with father appeared to have the lowest levels of psychological distress other than to say that it is possible that single fathers receive more sympathy and support than single mothers.

10.3.3 Sibling sex constellation, regularity of contact, and age at separation

The main focus is on the effect of sibling sex constellation and the MRA supports and extends the conclusions from analysis of the full datasets in that among those from non-intact homes sibling sex constellation adds significantly to the variance explained even when these new variables, age at break up and level of contact, are included in the analysis. Female with sister compared with female with brother accounts for 12% of the explained variance in psychological distress in study 1 and 5% of the variance in psychological distress in study 2 among those from non-intact homes. This is in addition to the effect of regularity of contact and age at the time of parental separation. In study 1 looking at family relations as a possible mediating mechanism sibling sex constellation accounts for 7% of the explained variance while age at break up accounts for 3% of the total explained variance. In study 2 sibling sex constellation accounts for all of the 25% explained variance in family relations. Without labouring the point too much this additional analysis of those from non-intact homes provides additional support for the sibling sex constellation effect found in the two previously reported studies.

11 Discussion

This study aimed to expand the existing literature on family structure and well-being of emerging adults by examining the potential buffering effect of sibling sex and support. The programme of research had two overall aims: To explore the impact of the sex constellation of siblings upon psychological distress, within a psychosocial model of stress, and to explore the role of sibling sex constellation in adjustment following parental separation. There were four specific research questions which this thesis aimed to address:

- 1) Does the sex constellation of siblings in a family have a direct impact on psychological distress in emerging adults?
- 2) Does the sex constellation of siblings in a family have an impact on the psychosocial factors related to stress?
- 3) Does the sex constellation of siblings in a family have an impact on perceptions of family environment?
- 4) Does the sex constellation of siblings in a family effect the impact of parental separation on adult psychological distress, the psychosocial factors related to stress, and perceptions of the family environment?

The findings regarding each of the research questions will be discussed respectively in the following sections.

11.1 Effects of sibling sex constellation on psychological distress

The first research question concerned whether or not the sibling sex constellation in the family is related to psychological adjustment, indexed by levels of psychological distress in the current programme of research. The results from both Study 1 and Study

2 showed a significant main effect for both the sex of siblings, and the sibling sex constellation (sex of participant combined with sex of siblings) on psychological distress. When only the sex of siblings was considered, participants in both studies with sisters reported the lowest distress levels, whilst participants with only brothers reported high distress levels. Therefore, although the two studies used different measures of psychological distress rendering comparisons difficult, the findings were remarkably consistent in regard to sibling sex constellation, providing a positive answer to the first research question. While the data is cross-sectional and therefore any explanation offered must be tentative, the effect of sibling sex is quite clear. It would appear that the presence of brother(s) only is somehow related to increased distress, particularly for males (in direct opposition to Oliva and Arranz's (2005) assertion that males' sibling relationships are not related to their personal adjustment), while the presence of sister(s) only relates to lower distress for both sexes. These findings therefore demonstrate not only the impact of sibling sex constellation on individual's distress levels, but also the protective nature of female siblings and the potentiating (negative) effects of male siblings.

Although the findings of the current programme of research regarding sibling sex constellation and distress are in contrast to Sandler's (1980) finding that the mere presence of any siblings had a stress buffering effect, the protective effect of female siblings in is supported to a degree by previous research. The sex intensification hypothesis posits that females have greater psychological and emotional stakes in the family than males, leading to high levels of interpersonal concern in family relationships (Richmond and Stocker, 2007). It is possible that the concern that females have for their siblings provides the siblings with a level of support or care which serves to protect them from distress. Indeed earlier research findings that adults consider their relationships with their sisters to be of particular importance led to researchers attributing this to females' traditional role as nurturers (Dunn, 2002). Previous research conducted on the effects of sibling sex constellation upon the sibling relationship suggested that, due to the importance of the female role in family relations (Kim, McHale, Osgood, & Crouter, 2006), and the finding that female siblings are more supportive and positive towards their siblings than are males, warm protective

relationships with sisters may be the most protective against generalized stressors (Kim, McHale, Couter, & Osgood, 2007). The findings from the current studies certainly appear to support these assertions.

11.2 Effects of sibling sex constellation on psychosocial factors related to distress

In order to assess the mechanisms by which sibling sex constellation affects distress levels, the effect of sibling sex constellation upon known mediators and moderators of psychological distress was measured in both studies. The psychosocial variables included in the studies (social support, locus of control, optimism, pessimism, and achievement motivation) have been consistently identified in the literature as mediating or moderating psychological distress and therefore psychological adjustment (e.g. Tusaie, Puskar, & Sereika, 2007; Cassidy, 1999; 2000).

There were significant main effects for sibling sex constellation on all the psychosocial variables included in the two studies; social support, locus of control, optimism, pessimism, and achievement motivation. The research therefore provides a positive response to the second research question. The interactions between the participant and sibling sex combination, and each of the measured psychosocial factors will now be discussed in turn.

11.2.1 Social support

The protective effect of female siblings was particularly pronounced in the case of perceived social support; in Study 1 female participants with a sister reported the highest levels of perceived social support, and in Study 2 participants of both sexes with sisters reported the highest levels of available support. In further support of the effects of sibling sex upon social support, participants of both sexes with brothers reported the lowest levels of perceived available support. The finding in Study 1 supported previous literature; female dyads and mixed sex dyads have been found to be more prosocial to

each other than male only dyads (Tucker, Barber, & Eccles, 1997; Abramovitch, Pepler, & Corter, 1982), the reduction in perceived available support in sibling dyads including a male compared to mixed sex or female only dyads may therefore be representative of the reduction in pro-social behaviour toward one another.

11.2.2 Locus of control

Although there was a main effect for sibling sex constellation upon perceived control in both studies, the findings of the two studies regarding locus of control were in direct opposition to one another. Firstly there was no significant main effect for participant sex on locus of control in study 2, whereas in Study 1 male participants reported a significantly stronger internal locus of control than female participants. Secondly, when both the sex of the participant and the sex of their siblings is considered there are significant findings in both studies but they are each a complete reversal of the other. In Study 1 participants of both sexes with both brothers and sisters reported the most internal locus of control and singletons (again of both sexes) reported the most external. However in Study 2 participants of both sexes with both brothers and sisters reported the most external locus of control and singletons of both sexes reported an internal locus of control. The findings from Study 1 suggested that males with siblings may be socialized to feel responsible for or protective of their siblings, particularly sisters, increasing their perception of responsibility and resulting in a strong internal locus of control. In contrast the findings from Study 2 suggest that having a number of siblings, particularly of both sexes, reduces perceived control for individuals, which is also perhaps understandable; the larger the number of family members the less control each member would arguably have within the family, this reduced level of control may then be generalized to situations outside of the family. The complete reversal of findings is puzzling; both studies used the same measure and the relationship between sibling sex constellation and locus of control has not been studied before, so previous literature cannot aid in an explanation.

11.2.3 Optimism and pessimism

In study 1 the findings for both optimism and pessimism followed the same pattern as those across both studies for social support; participants of both sexes with sisters were the most optimistic and participants of both sexes with brothers were the least optimistic. These findings suggested that the presence of a female sibling actually increases optimism in some way for both sexes, whilst the presence of male siblings decreases optimism. The pattern reported for optimism was then repeated, although reversed, for pessimism, again suggesting a positive effect of female siblings and a negative effect of male siblings.

The findings for optimism and pessimism differed in Study 2; there were main effects for sibling sex constellation on both optimism and pessimism; singletons of both sexes reported substantially lower levels of optimism than all other categories and males and females with sisters reported the lowest pessimism levels. However the absence of a main effect of participant sex on optimism or pessimism, and the absence of any interaction effects of participant sex and sex of siblings on optimism or pessimism meant that only the sex of participants' siblings (and not their own sex) affected their optimism and pessimism levels in Study 2. When only sibling sex was considered, participants with brothers reported the highest optimism levels, followed by participants with both brothers and sisters, participants with sisters and finally singletons. However it was only between singletons and the other categories that the differences were significant. As the relationships between sibling sex constellation and either optimism or pessimism have not been studied previously, there is no literature to suggest possible reasons for these findings.

11.2.4 Achievement motivation

There was a main effect of sibling sex constellation on achievement motivation; participants of both sexes with sisters report the most achievement motivation and participants of both sexes with brothers the least. This finding suggests that the presence of female siblings in some way increases achievement motivation, as it occurs across both sexes. It is possible that male participants with female siblings experience

traditional sex role training; therefore resulting in high levels of achievement motivation (Carr & Mednick, 1988). Female participants with sisters may experience non-traditional sex role training, as a result of being an all female familial generation, and therefore also have high levels of achievement motivation. The finding that sibling sex constellation effects achievement motivation is important because achievement motivation is consistently linked in the literature to subjective well-being and therefore psychological health (Diener, Suh, Lucas, & Smith, 1999; Cassidy, 2000b), but the relationship between sibling sex constellation and achievement motivation has not been studied before.

11.2.5 Problem solving style and coping style

In addition to the psychosocial variables above, the second study aimed to explore any effects of sibling sex constellation upon two different aspects of the coping process; problem solving style and coping style. There was a main effect of sibling sex constellation on problem solving style; participants of both sexes with sisters scored highest, therefore having the most positive problem solving style, and participants of both sexes with brothers scored lowest, therefore having the least positive problem solving style. It is particularly clear then that for problem solving style, just as for social support and achievement motivation, female siblings have a positive influence, whilst male siblings have a negative influence. As positive problem solving styles are thought to lead to effective problem solving skills, therefore reducing distress levels (Cassidy, 1999), the finding that sibling sex constellation has an effect upon problem solving styles is an important one.

With regards to coping styles there were also main effects of sibling sex constellation on all three second order factors; rational coping, emotion coping, and avoidance coping. However, there seemed to be no discernable pattern across the two sexes for sibling sex; females in all sibling constellations except for singletons scored higher than males on all three factors. This may have been because participant sex only had a main effect on two of the three second order factors; rational coping and avoidance coping (in both cases females scored higher than males). However, sibling sex structure, without

participant sex being taken into account, did have a main effect on all three second order factors; singletons scored lowest and participants with brothers scored highest for all three factors. It is difficult to provide an explanation for the coping effects but one possible reason for this is that coping styles do tend to relate to coping behaviours which tend to change and adapt to the demands by which they are elicited. In other words to get an accurate picture of coping styles one needs to relate them to particular situations. When asked about coping styles in general, as in the current study, participants will tend to relate them to current life events which may be why no consistent patterns are observed as there may be little consistency in events. For example it has been established that for severe or traumatic events, avoidance coping is both effective and positive in the short term (Wright, Borril, Teers, & Cassidy, 2006), whereas for less severe, chronic stressors, avoidance coping would have a negative impact (Cassidy, 1999). Future research might ask participants to identify events focused on when responding to items.

11.3 Effects of sibling sex constellation on perceptions of the family environment

In both studies presented in this thesis there were main effects of sibling sex constellation on all three second order factors of the Family Environment Scale; family relations, personal growth, and systems maintenance. Participants of both sexes with sisters reported high family relations scores, whilst participants of both sexes with brothers reported the lowest. With regards to personal growth the findings in Study 1 seemed to indicate that in the case of personal growth the optimum constellation is no siblings at all, but that for those participants with siblings the presence of sisters was related to more personal growth. However, in Study 2 for both the personal growth and systems maintenance factors there was little discernable pattern with regards to sibling sex constellation; instead females generally appeared to report higher levels of both personal growth and systems maintenance.

The studies included in this thesis therefore provide some evidence of a link between sibling sex constellation and relationships within the family that enhance perceived support and psychosocial factors such as optimism. With regards to family relations (a second order factor comprised of the first order factor; cohesion, expressiveness, and conflict) the findings of the current programme of research support those of previous research; that female siblings increase cohesion and expressiveness, and decrease conflict (Weiss, Schitaffino, Ilowite, 2001), whilst male siblings have the opposite effect. These findings suggest that the presence of female siblings, without the apparent negative influence of male siblings, is conducive to good, positive family relations, high in both expressiveness and cohesion, and low in conflict. A high expressiveness, high cohesion, and low conflict environment would be described as nurturing. This could provide some support for the emotional security hypothesis (Davies & Cummings, 1994), which is based on attachment theory. Emotional security, which provides the basis for well being and as such reduces distress, would be enhanced by a nurturing environment. On the other hand a low expressiveness, low cohesion, and high conflict environment; more likely where there are male siblings, would provide a threat to an individual's emotional security. Alternatively, one could argue a link with social learning theory (Bandura, 1973). The presence of female siblings would provide a model for more expressiveness, more cohesion, and less conflict, given their profile in the current data, whereas male siblings might provide a negative model. In addition the nurturing type behaviour would be more likely to be rewarded and is therefore more likely to be imitated.

11.4 Effects of sibling sex constellation following parental separation

The final research question posed was whether the sex constellation of siblings in the family might affect the impact of parental separation on later psychological distress, psychosocial factors related to stress, and perceptions of the family environment as an adult.

11.4.1 Effects of sibling sex constellation and parental separation on psychological distress

Contrary to expectations, in Study 1 the relationship status of parents did not have a significant main effect on participants' distress levels; in fact participants from intact homes reported higher levels of distress than participants from broken homes, though this was not significant. This finding may be explained by the previously documented resilience of college students with separated parents (Laumann-Billings and Emery, 2000); thought to be because students with separated parents are better equipped for college life, and therefore cope more effectively with college stressors than students from intact homes (McIntyre, Heron, McIntyre, Burton, & Engler, 2003).

Although in Study 1 there was no main effect of parental marital status on distress levels, when the sex constellation of siblings was taken into account there was a significant interaction effect between the sex constellation of siblings, parental marital status, and psychological distress; suggesting the possibility of the sex constellation of siblings playing a mediating role in the relationship between parental separation and offspring distress. As both the highest and lowest levels of psychological distress were reported by males in broken homes; the highest level of distress by males with brothers in broken homes, and the lowest level of distress by males with sisters from broken homes, the strength of the positive effect of female siblings and the apparent negative effect of male siblings was demonstrated.

It was hypothesized that in Study 2 the use of an adult sample from the general population would produce distress findings more in line with expectations; parental relationship status would have a main effect upon distress levels and, as a result, sibling sex constellation would serve as a moderator in the relationship between parental separation and distress. This was the case; parental relationship status had a main effect upon distress levels; participants had lower distress levels in intact homes than their counterparts in broken homes, supporting previous literature (Maier & Lachman, 2000; Cherlin, Chase-Lansdale, & McRae, 1998), and sibling sex constellation appeared to moderate the relationship between parental separation and distress. However, it was

also hypothesized that female siblings would be a protective factor against distress in broken homes, but the pattern was more complex than in Study 1 where female siblings operated as protective factors for all participants. In Study 2 the presence of any siblings of either sex appears to considerably reduce distress levels for males from broken homes, whereas the presence of male siblings greatly increases distress levels for female participants in broken homes. It was therefore surmised that for males in broken homes siblings of either sex is a protective factor, and for females in broken homes male siblings are a potentiating factor; amplifying their risk of distress.

The findings above regarding the influence of sibling sex constellation upon distress in both broken and intact homes are of particular importance as they are the first of their type; the influence of sibling sex constellation upon levels of psychological distress has not been studied before. The research in the area that has taken the sex of siblings into account has only looked at the sex of siblings in a dyad (2 members), and has tended to measure behaviour (specifically externalizing or internalizing behaviour) as an index of adjustment, often in children and therefore by parental or teacher report. The studies presented in this thesis are therefore the first to investigate the effects of sibling sex constellation using distress levels as an index of adjustment, and the first to study this using adult samples following parental separation.

11.4.2 Effects of sibling sex constellation and parental separation on psychosocial factors associated with distress

In Study 1 significant interaction effects between sibling sex constellation and parental relationship status were also found on all four psychosocial variables, suggesting that sibling sex constellation may moderate the relationships between parental separation and both locus of control and pessimism, and possibly mediates the relationships between parental separation and both social support and optimism (as there was no main effect for parental separation on social support or optimism).

In Study 2 there were significant interaction effects of intact/non-intact homes and sibling sex constellation on all variables except for pessimism; suggesting that sibling

sex constellation may have moderated the relationship between parental separation and achievement motivation, and may have played a mediating role in the relationships between parental separation and social support, locus of control, and optimism. The finding that sibling sex constellation may have mediated the relationship between parental separation and both social support and optimism replicated Study 1's. However, in Study 2 sibling sex constellation played a possible mediating role in the relationship between parental separation and locus of control, whilst it played a possible moderating role in this relationship in Study 1.

11.4.2.1 Social support

Interestingly, sibling sex constellation appeared to play a possible mediating role in the relationship between parental marital status and perceived available social support in both studies, and participants with siblings of either sex from broken homes tended to report higher levels of available social support than their counterparts in intact families. That participants from broken homes reported more support than participants from intact homes does not accord with the literature; which would assume reduced social support levels in broken homes (i.e. Boyce, Rodgers, & Rose, 2002). However, as this only occurred for participants with siblings in broken homes, when the literature on sibling relationships post parental separation is taken into account this finding can be explained. Siblings from separated families have been found to form a close bond, therefore providing each other with more support than siblings provide for each other in intact families (Milevsky, 2005; Milevsky & Levitt, 2005). The protective effects of siblings have only ever been found in children in disharmonious homes; leading researchers to postulate that sibling relationships provide protection for children against maladjustment only when necessary (Jenkins, 1992). The two studies presented in this thesis are the first to find this protective effect in adults and specifically in relation to perceived social support, rather than externalizing or internalizing behaviours. Again, the positive effects of female participants in particular were highlighted; participants of both sexes with female siblings reported the most support. This may be due to females' greater tendency to place importance on interpersonal relationships (Colarossi & Eccles, 2000); female siblings might encourage their siblings (either directly or via modelling

processes) to build and maintain strong friendships, thus accounting for the positive effect of female siblings upon perceived social support for participants of both sexes.

11.4.2.2 Optimism and pessimism

Optimism was a significant predictor of psychological distress in both studies. Interestingly the effects of sibling sex on optimism levels reverse according to family status; male siblings appear to increase optimism in intact homes whereas female siblings increase optimism in broken homes. It is possible that as males are reported in the literature as being more optimistic (Extemera, Duran, & Rey, 2007) the presence of male siblings in intact families increases optimism, but in broken homes; which reduce optimism levels, female siblings' greater concern for family members (Colarossi & Eccles, 2000) and prosocial attitude towards siblings (Dunn, 2002) increases optimism. The findings for pessimism were a little different; in study 1 sibling sex constellation acted as a moderator of the relationship between parental separation and pessimism, with the pattern of results being the direct opposite of optimism. However, in Study 2 there was no main effect of parental status upon pessimism and no interaction effects between sibling sex constellation and parental status upon pessimism. The relationships between sibling sex constellation and parental separation upon levels of optimism or pessimism have not been previously reported in the literature.

11.4.2.3 Locus of control

The relationship between parental marital status and locus of control may have been moderated by sibling sex constellation in study 1, and mediated by sibling sex constellation in study 2. In both studies the pattern was similar in that sisters increased perceptions of control; in Study 1 males with both brothers and sisters in broken homes and females with sisters in broken homes reported the most internal locus of control and in Study 2 males with sisters reported the strongest internal locus of control. Although it is not clear from any literature why female siblings increase perceptions of control it is possible that, similarly to achievement motivation (Carr & Mednick, 1988), male participants are given traditional sex role training; resulting in more perceived control,

and female participants with sisters are given non-traditional sex role training; also resulting in increased perceptions of control. This theory is supported to some degree by the finding that males with both brothers and sisters still have high levels of perceived control but the mere presence of a male sibling reduces control for females.

11.4.2.4 Achievement motivation

The importance of achievement motivation in the stress process was highlighted in Study 2 by the Multiple Regression Analysis; whereby it was found to be both a direct predictor of distress, and an indirect predictor of distress via optimism. Although achievement motivation was found to play a moderating role in the relationship between parental marital status and psychological distress, in broken homes the sex of the participant appeared to play a more important role than sibling sex, and in intact homes sibling sex constellation clearly played a more important role than participant sex. In broken homes male participants in all constellations except for those with brothers scored higher than females in any sibling constellation. Again these findings suggest that the presence of female sibling increases achievement motivation, as was the case before parental status was taken into consideration.

11.4.3 Effects of sibling sex constellation and parental separation on the coping process

In addition to the psychosocial variables above, Study 2 explored the effects of sibling sex constellation and parental separation upon two different aspects of the coping process; problem solving style and coping style. Sibling sex constellation appeared to moderate the relationship between parental separation and problem solving style. Regardless of parental relationship status participants of both sexes with sisters reported the most positive problem solving styles, and participants of both sexes with brothers reported the most negative problem solving styles. Problem solving style was an indirect predictor of distress; operating via optimism and achievement motivation, this supported previous literature regarding problem solving style's place in the appraisal process; namely that problem solving process consists of two components, problem

orientation, and problem solving skills (D’Zurilla, Maydeu-Olivares, & Kant, 1998). Problem orientation focuses on generalized expectancies and attributions and explains the influence upon optimism, whilst problem solving skills involves goal directed tasks, which explains the influence upon achievement motivation; a positive problem solving style increases goal directed behaviour, thus increasing achievement motivation.

Main effects were found for intact/non-intact homes on rational coping and avoidance coping but not emotion coping; participants from broken homes reported more use of both rational and avoidance coping than those from intact homes. This was in accordance with the literature, in which the most common coping response to parental divorce is active cognitive coping (i.e. Sandler, Tein, & West, 1994; Armistead et al., 1990; Radovanoic, 1993), which can be likened to the COPE second order factor rational coping. Sibling sex constellation may have been a moderator in the relationships between parental separation and rational coping, and avoidance coping, and a mediator between parental separation and emotion coping. The importance of both rational coping and avoidance coping was highlighted by the MRA; whereby they were both found to be direct predictors of psychological distress. All three COPE second order factors were also indirect predictors of distress via optimism, and rational coping and emotion coping both indirectly predicted distress via achievement motivation. The influence of sibling sex constellation upon problem solving style and coping style has not been studied before, but in the current exploration the positive influence of female siblings was apparent again.

11.4.4 Effects of sibling sex constellation and parental separation on the family environment

In study 1 significant main effects of parental relationship status (intact/non-intact homes) on all three second order factors of the Family Environment Scale and significant interaction effects between sibling sex constellation and intact/non-intact homes on all three suggested that sibling sex constellation might play a moderating role, moderating the impact of parental separation upon the family environment. However, in Study 2 although sibling sex constellation again may have moderated the

relationships between parental separation and both family relations, and systems maintenance, it played a possible mediating role in the relationship between parental separation and personal growth.

Family relations was of particular interest due to previous research suggesting that females exert a positive influence by increasing cohesion and expressiveness, whilst simultaneously reducing conflict (i.e. Weiss, Schitaffino, & Ilowite, 2001; Cassidy & Newport, 1996); the second order factor family relations is comprised of these three first order factors on the FES (cohesion, expressiveness, and conflict). In Study 1 there was a clear negative effect of parental separation upon family relations, as well as a clear positive effect of female siblings upon family relations; participants of both sexes with sisters in intact homes reported the highest levels of positive family relations, whereas participants (of both sexes) with brothers in broken homes reported the lowest levels of positive family relations.

However, in study 2 the pattern was slightly different; the presence of a sister increased cohesion and expressiveness and decreased conflict for females in broken homes, but the same effect only occurred for males in intact homes. The presence of a brother, meanwhile, decreased cohesion and expressiveness for both sexes in broken homes, as was expected, but reduced conflict for males (not females) in broken homes. The majority of these findings accord with previous literature; female siblings have been shown to increase cohesion and decrease conflict in the family (Weiss, Schitaffino, & Ilowite, 2001) and in Study 2 that was the case for females in broken homes and males in intact homes. However, in the literature male siblings have been shown to have the reverse effect; decreasing cohesion and increasing conflict (Weiss et al., 2001), in Study 2 that was the case for females in broken homes but not for males in broken homes; whereby brothers did decrease cohesion as expected but simultaneously decreased conflict. This was an unexpected finding at odds with the limited literature on siblings' effects upon the family environment.

11.5 Applications of findings

The purpose of this area of research is to inform both the debate concerning the social and psychological consequences of changes in family situations and the programmes and techniques designed to improve parenting and family support service. Research in this area has an important application in terms of informing the literature as a basis for other research which can further explore this largely uncharted territory. It can also begin to feed into the theoretical base for practice in a range of areas. Firstly family therapists and counsellors can learn to observe the sibling sex constellation effects and to identify when an intervention might be warranted; thus indicating areas of functioning that may be targeted. Clearly the current findings are based on means across groups and the presence of sisters will not always be positive as the presence of brothers will not always be negative. However when a family constellation is largely constructed of male siblings there is a need to observe if this reduces expressiveness and cohesion and increases conflict. Conversely an observed positive effect of female siblings may be utilised as a natural process of improving relations. Another area of growing interest currently is the field of parenting skills training. There are many reasons why young parents may not have acquired skills that past generations may have naturally accrued through early experiences within larger families. To counteract this parenting skills may need in some cases to be professionally taught and the current research provides some insight that might be usefully applied.

Elucidating the factors that account for the widely reported variation in adjustment post parental separation is important in order to devise effective, appropriately targeted preventative interventions. In times of family crisis or transition, such as parental conflict or separation, the natural support system existing among siblings may serve to protect children against the adverse consequences of such crises or transitions. Siblings can provide a safe and predictable world inside an unstable family therefore when formulating access and custody agreements, facilitating siblings' access to one another and the protection and maintenance of the sibling relationship should be important considerations. This also applies to decisions regarding foster care placement and

adoption of siblings; in cases where joint placement is not possible, courts should make decisions to ensure siblings have frequent visitation.

The sibling bond and its supportive nature has recently been recognised by therapists, who have started to use siblings in therapy for eating disorders; extending the natural support system that exists in the sibling relationship. Understanding of the effects of sibling sex constellation upon not only the sibling relationship but also psychosocial correlates of distress and the family environment can help therapists to gain a deeper understanding of an individual, and how their relationship with their siblings may or indeed may not have a therapeutic application.

11.6 Limitations

It should be considered that sex or gender is only a marker variable for a more complex set of proximal processes (Davies & Lindsay, 2001). The relevance of sibling sex constellation may depend more on siblings' sex-typed personal qualities (i.e. expressiveness, dominance) than on their actual sex. It is possible that the extent to which siblings model behaviours in accordance with traditionally masculine or feminine roles, rather than the siblings' actual sex, may moderate the effects of family structure (Updegraff, McHale, & Crouter, 2002).

This study does not permit a separation between direct effects of separation and effects of interparental conflict both prior to and post separation; only parental separation was assessed rather than marital conflict. However, Riggio (2001) suggested that the occurrence of divorce is associated with less positive attitudes towards the sibling relationship regardless of the level of parental marital conflict in the home. Other previous research also documents the negative effects of parental divorce independently of marital conflict on the adjustment of children (i.e. Forehand et al., 1991; Fauber, Forehand, Thomas, & Wierson, 1990), suggesting that regardless of the source of the effects of parental divorce, the affect exists nonetheless. The studies also did not include information concerning current household composition or remarriages after parental separation; only the separation representing the dissolution of biological

parents' marriage was considered. However, it is likely that the structural features of the family and additional experiences regarding the marriage of either parent are important to understanding adjustment after parental separation.

Recall bias is a potential problem when using cross sectional data such as that included in these studies; asking adult participants to report on their childhood. Subjective information about their social support system, family environment and conflict may simply be a reflection of the participants' current psychological states; well adjusted adults may place little importance on negative aspects of family life or just choose to remember positives. Conversely, emotionally troubled individuals may be primed to recall aversive events from childhood, including instances of family conflict. Because the same individuals reported on events in their families and on their current level of well-being, the limitation of same source bias applies; reliance on a single informant raises the possibility that relations between these constructs may be influenced by method variance. Common method variance is likely to inflate the magnitude of associations in these studies. However objective information about family structure is probably a true reflection of childhood conditions; it's likely that participants will accurately remember whether their parents got separated when they were children. In this case it may only be sensible to use same source assessments for each of the variables studies; the data represents the individual's perception and appraisal of both their family environment (retrospective) and their adjustment, and it is their appraisal of their family environment which may affect their adjustment. For example in the case of social support, actual social support is not as useful in predicting adjustment as is perceived social support; it is an individuals' perception or appraisal of their situation which affects their adjustment.

Further, although causal assumptions were made in the regression procedures used in the analysis the relationships represent only co-variations between variables. Although cross sectional data can verify a relationship between two constructs, they cannot establish the causal priority that exists between them. Demonstrating concurrent associations between the proposed mediator or moderator and outcome variable (adjustment, indexed by distress) in regression analysis cannot address the possibility

that adjustment exerts effects on coping. Studies using prospective, longitudinal designs are necessary to include measurements of earlier adjustment or distress, thereby permitting an estimate of change in later adjustment as a function of mediating or moderating variables. Similarly the use of analyses such as structural equation modelling would allow for the explicit testing of mediation.

Another limitation involves the age group that was studied. Younger children or older adults from separated families might report less distress than the emerging adults in the current studies' samples, as young adults often focus intently and perhaps critically on their family life (Laumann-Billings & Emery, 2000). Whether or not the participant lived with their family may also have influenced the results, but was not taken into consideration in the studies presented.

11.7 Directions for further research

This research suggests that sibling relationships are perhaps of equal importance to parental relationships. The fact that this area is under researched may be due to the complex nature of family environments and family structure. While this study by no means addresses all the issues it does highlight a number of interesting relationships. Clearly the addition of some qualitative methods such as semi-structured interviews would allow a more in depth understanding of the complex environment and relationships previously mentioned. Some of the debate regarding the impact of non-intact homes has lacked the understanding that can be provided by this type of research.

Further research should attempt to isolate the features of sibling relationships that might serve to moderate the impact of parental separation on adjustment. It is clear that further research is needed in order to gain an understanding of the mechanisms that underlie the possible moderating role of sibling gender. For example, emotional intelligence may play a role. The emotional intelligence of the person's siblings could be a medium through which they exert their influence; female siblings may have more

emotional intelligence and therefore be better able to provide appropriate support, rendering them better protective factors than male siblings.

An interesting research question for the future would be whether the impact of divorce and family break up is subject to a generational effect. In a social context where there are almost as many children from broken homes as there are from traditional families children may even wear their broken home status as a badge of honour.

12 Conclusion

This study attempted to expand the existing literature on family structure and well-being of emerging adults by examining the potential buffering effect of sibling gender and support. This study further contributes to the existing body of literature by examining outcomes and processes associated with parental separation from the perspective of the emerging adult. Divorce research using large samples has often relied on parental and teacher's accounts of offspring's behaviours as measures of adjustment (Boyce Rodgers & Rose, 2002). In the present study self report of both distress levels and of a number of psychosocial variables associated with distress, provides a stronger measure of emerging adults' mental health than has often been reported.

The two studies presented in this thesis demonstrated the impact of sibling sex constellation on psychological distress, a range of psychosocial variables (social support, locus of control, optimism, pessimism, and achievement motivation), aspects of the coping process (problem solving style and coping style), and the family environment. The importance of these findings regarding the impact of sibling sex constellation was further emphasized by its influence upon these variables after parental separation, in an adult sample.

13 References

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Appendix A

Study 1 Questionnaire

Section 1: Please complete the personal details below before going on to the main questionnaire. Some of the questions may seem a little personal, but you can be assured that the information is anonymous, will be treated confidentially, and is purely in the interest of research.

- 1 Age _____ Sex _____
- 2 How many siblings do you have?
Brothers _____ *Sisters* _____
- 3 Have your biological parents remained together?
Yes *No*
- 4 If *No*, what age were you when your parents separated? _____
- 5 Which parent did you live with after the separation?
Mother *Father* *Neither*
- 6 How often did you see the parent that you no longer lived with?
More Than Once A Week *Once A Week* *Once A Fortnight*
Once A Month *Once A Year Or Less* *Never*

Section 2: The following statements are about families and you are asked to decide which are true, which are sometimes true, and which are false of the family you grew up in. Please put a circle around *True* if the statement was true, *Sometimes True* if it was sometimes true, or *False* if it was false. Some statements may have been true for some members and false for others. If this happens please decide whether it was true, sometimes true or false for the majority and circle appropriately. There are no right or wrong answers and we are only interested in your impression of the family you grew up in.

- 1 Family members really helped and supported one another. *True* *Sometimes True* *False*

2	Family members often kept their feelings to themselves.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
3	We fought a lot in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
4	We felt it was important to be the best at whatever you did.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
5	Family members attended religious services fairly often.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
6	Activities in our family were pretty carefully planned.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
7	We said anything we wanted to around home.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
8	Family members rarely became openly angry.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
9	In our family, we were strongly encouraged to be independent.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
10	Getting ahead in life was very important in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
11	We rarely went to the cinema or the theatre.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
12	Friends often came over for dinner or to visit.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
13	We didn't say prayers in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
14	We were generally very neat and orderly.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
15	There were very few rules to follow in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
16	It was hard to "blow off steam" at home without upsetting someone.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
17	Family members sometimes got so angry they threw things.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>

18	Learning about new and different things was very important to us.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
19	Nobody in our family was active in sports, or leisure pursuits.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
20	We often talked about the meaning of religion in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
21	There was a feeling of togetherness in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
22	We told each other about our personal problems.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
23	Family members hardly ever lost their tempers.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
24	We came and went as we wanted to in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
25	We believed in competition and "may the best person win."	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
26	We were not that interested in cultural activities.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
27	We often went to movies, sports events, etc. together	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
28	We didn't believe in heaven or hell.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
29	Being on time was very important in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
30	There were set ways of doing things at home.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
31	Family members often criticised each other.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
32	There was very little privacy in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
33	We always strove to do things just a little better	<i>True</i>	<i>Sometimes</i>	<i>False</i>

	the next time.		<i>True</i>	
34	We rarely had intellectual discussions.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
35	Everyone in our family had a hobby or two.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
36	There was a strong emphasis on following rules in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
37	Family members always backed each other.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
38	Someone usually got upset if you complained in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
39	Family members sometimes hit each other.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
40	Family members rarely worried about job promotions, school grades, etc.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
41	Family members were not very involved in recreational activities outside work or school.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
42	Family members made sure their rooms were neat.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
43	There was very little group spirit in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
44	Money and paying bills was openly talked about in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
45	Family members strongly encouraged each other to stand up for their rights.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
46	In our family, we didn't try that hard to succeed.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
47	Family members sometimes attended courses or took lessons for some hobby or interest (outside of school).	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
48	Each person's duties were clearly defined in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>

49	We could do whatever we wanted to in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
50	We really got along well with each other.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
51	It was hard to be by yourself without hurting someone's feelings in our household.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
52	Watching T.V. was more important than reading in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
53	Religion was very important in our home.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
54	There was plenty of time and attention for everyone in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
55	There were a lot of spontaneous discussions in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
56	In our family, we believed you don't ever get anywhere by raising your voice.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
57	We were not really encouraged to speak up for ourselves in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
58	Family members were often compared with others as to how well they were doing at work or school.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
59	Family members really liked music, art and literature.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
60	Family members believed that if you sin you will be punished.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
61	Dishes were usually done immediately after eating.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
62	You couldn't get away with much in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>

Section 3: Below are a number of statements about how various topics affect your personal beliefs. Please circle the response that most appropriately describes your beliefs.

1 My life is controlled by outside actions and events.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
---------------------------	--------------	---	---	-----------------	------------------------------

2 A great deal of what happens to me is probably just a matter of chance.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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3 Everyone knows that luck or chance determines one's future.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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4 I can control my problem(s) only if I have outside support.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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5 When I make plans I am almost certain I can make them work.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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6 My problem(s) will dominate me all my life.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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7 My mistakes and problems are my responsibility to deal with.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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8 Becoming a success is a matter of hard work, luck has nothing to do with it.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Then Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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9 I can anticipate difficulties and take action to avoid them.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Then Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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10 People are victims of circumstances beyond their control.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Then Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
---------------------------	--------------	---	---	-----------------	------------------------------

11 To continually manage my problems I need professional help.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Then Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
---------------------------	--------------	---	---	-----------------	------------------------------

12 When I am under stress, the tightness in my muscles is due to things outside my control.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Then Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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13 I believe a person can really be master of his / her own fate.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Then Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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14 It is impossible to control my irregular and fast breathing when I am having difficulties.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Then Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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15 I understand why my problem(s) vary so much from one occasion to the next.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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16 I am confident of being able to deal successfully with future problems.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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17 In my case maintaining control over my problem(s) is due mostly to luck.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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Section 4: Using the scale below, please circle the most appropriate answer for you under each statement.

1 In uncertain times, I usually expect the best.

<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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2 It's easy for me to relax.

<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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3 If something can go wrong for me, it will.

<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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4 I always look on the bright side.

<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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5 I'm always optimistic about my future.

<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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6	I enjoy my friends a lot.	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
7	It's important for me to keep busy.	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
8	I hardly ever expect things to go my way.	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
9	Things never work out the way I want them to.	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
10	I don't get upset easily.	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
11	I'm a believer in the idea that 'every cloud has a silver lining'.	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
12	I rarely count on good things happening to me.	<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>

Section 5: Please circle either *Yes*, *Possibly* or *No* for the following statements as appropriate.

1	Do you have someone you can rely on to make you feel relaxed when you are under pressure?	<i>Yes</i>	<i>Possibly</i>	<i>No</i>
2	Do you have someone who accepts you totally, including both your good and bad points?	<i>Yes</i>	<i>Possibly</i>	<i>No</i>
3	Is there someone you can rely on to help sort out unpleasant disagreements if they occur?	<i>Yes</i>	<i>Possibly</i>	<i>No</i>
4	Do you have someone to turn to in an emergency?	<i>Yes</i>	<i>Possibly</i>	<i>No</i>

5	Do you ever feel alone and isolated?	<i>Yes</i>	<i>Possibly</i>	<i>No</i>
6	Do you have someone you can count on to distract you from your worries in times of stress?	<i>Yes</i>	<i>Possibly</i>	<i>No</i>
7	Is there someone who will care about you regardless of what is happening to you?	<i>Yes</i>	<i>Possibly</i>	<i>No</i>
8	Do you have someone who can give you practical support when you have a problem?	<i>Yes</i>	<i>Possibly</i>	<i>No</i>
9	is there someone who can make you feel good about yourself?	<i>Yes</i>	<i>Possibly</i>	<i>No</i>
10	Is there someone who turns to you when they have emotional problems?	<i>Yes</i>	<i>Possibly</i>	<i>No</i>
11	Is there anyone who asks you for advice about everyday practical problems?	<i>Yes</i>	<i>Possibly</i>	<i>No</i>
12	Do you enjoy your own company?	<i>Yes</i>	<i>Possibly</i>	<i>No</i>

Section 6: The following questions refer to how you have been feeling in the past month. Each question has four statements underneath. Please put a circle around the statement that you feel is most appropriate for you for each question.

- | | | | | | |
|---|---|--------------------------|----------------------|------------------------|-----------------------------|
| 1 | Been able to concentrate on what you are doing? | <i>Better Than Usual</i> | <i>Same As Usual</i> | <i>Less Than Usual</i> | <i>Much Less Than Usual</i> |
| 2 | Lost much sleep over worry? | <i>More Than Usual</i> | <i>Same As Usual</i> | <i>Less Than Usual</i> | <i>Much Less Than Usual</i> |
| 3 | Felt that you were playing a useful part in things? | <i>More Than Usual</i> | <i>Same As Usual</i> | <i>Less Than Usual</i> | <i>Much Less Than Usual</i> |

4	Felt capable of making decisions about things?	<i>More Than Usual</i>	<i>Same As Usual</i>	<i>Less Than Usual</i>	<i>Much Less Than Usual</i>
5	Felt constantly under strain?	<i>Much More Than Usual</i>	<i>Rather More Than Usual</i>	<i>No More Than Usual</i>	<i>Not At All</i>
6	Felt you couldn't overcome difficulties?	<i>Much More Than Usual</i>	<i>Rather More Than Usual</i>	<i>No More Than Usual</i>	<i>Not At All</i>
7	Been able to enjoy your normal day to day activities?	<i>More Than Usual</i>	<i>Same As Usual</i>	<i>Less Than Usual</i>	<i>Much Less Than Usual</i>
8	Been able to face up to your problems?	<i>More Than Usual</i>	<i>Same As Usual</i>	<i>Less Than Usual</i>	<i>Much Less Than Usual</i>
9	Been feeling unhappy and depressed?	<i>Much More Than Usual</i>	<i>Rather More Than Usual</i>	<i>No More Than Usual</i>	<i>Not At All</i>
10	Been losing confidence in yourself?	<i>Much More Than Usual</i>	<i>Rather More Than Usual</i>	<i>No More Than Usual</i>	<i>Not At All</i>
11	Been thinking of yourself as a worthless person?	<i>Much More Than Usual</i>	<i>Rather More Than Usual</i>	<i>No More Than Usual</i>	<i>Not At All</i>
12	Been feeling reasonably happy all things considered?	<i>More Than Usual</i>	<i>Same As Usual</i>	<i>Less Than Usual</i>	<i>Much Less Than Usual</i>

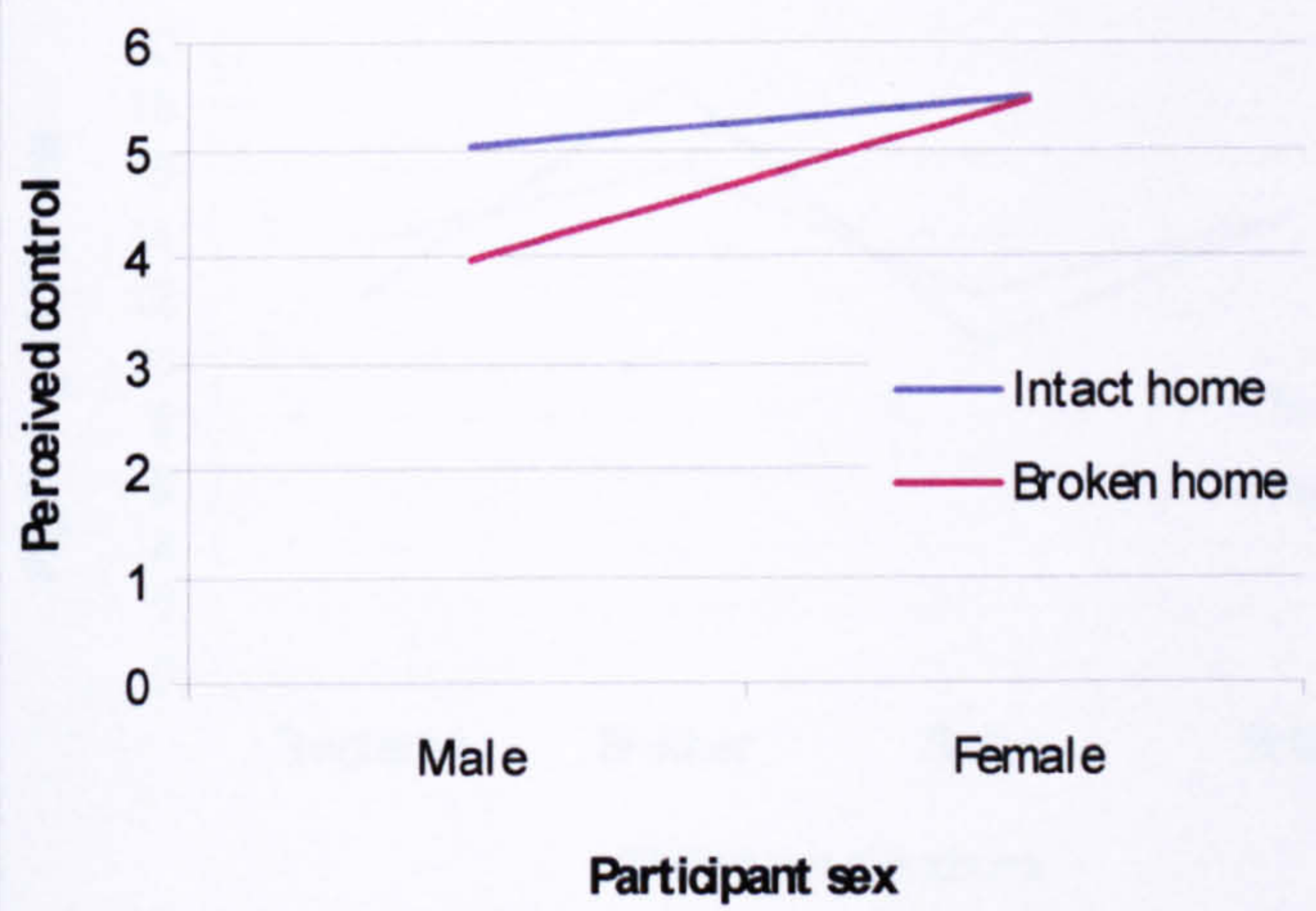
Appendix B

Illustrations of effects in Study 1

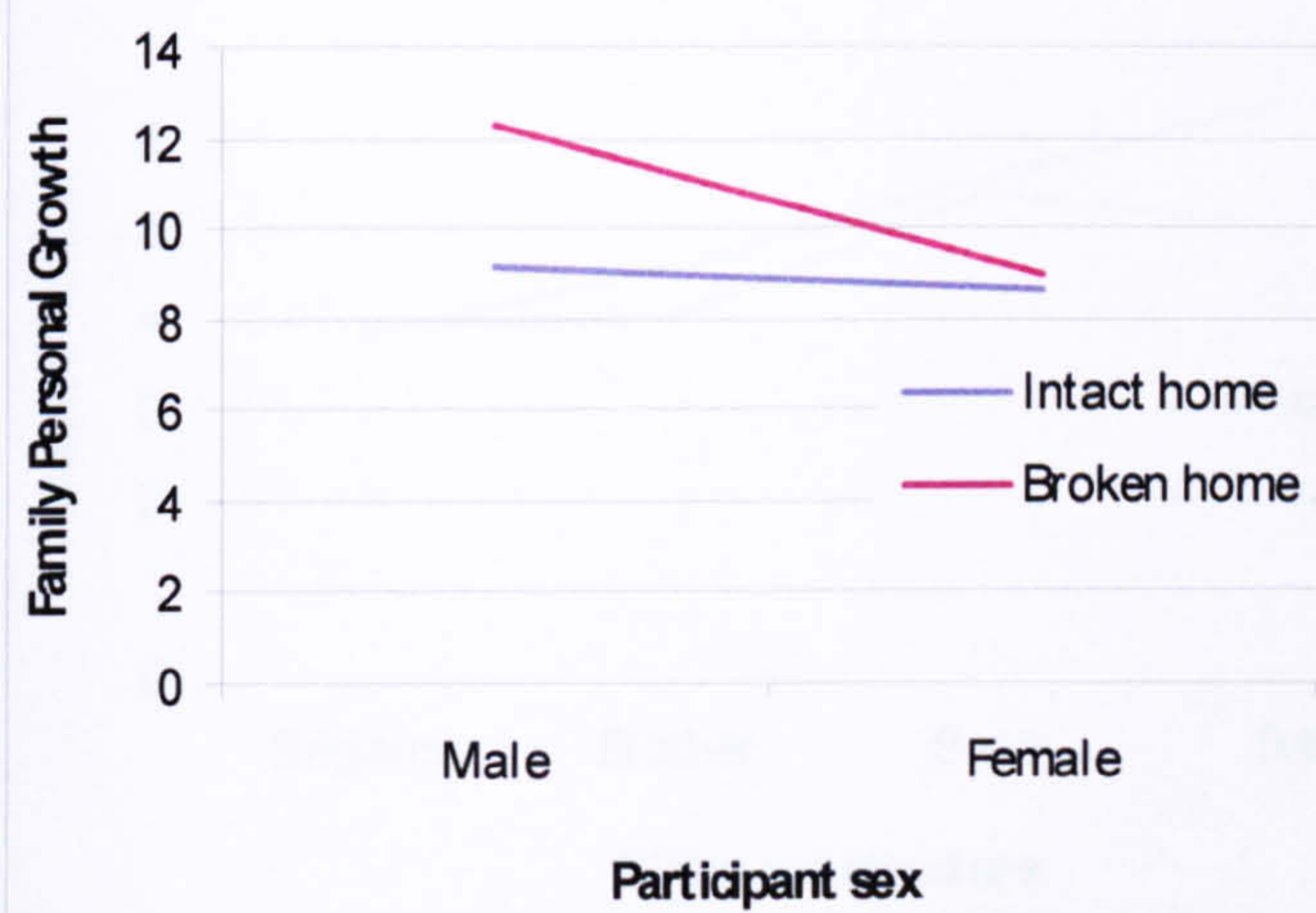
Interaction between sex and broken home on psychological distress



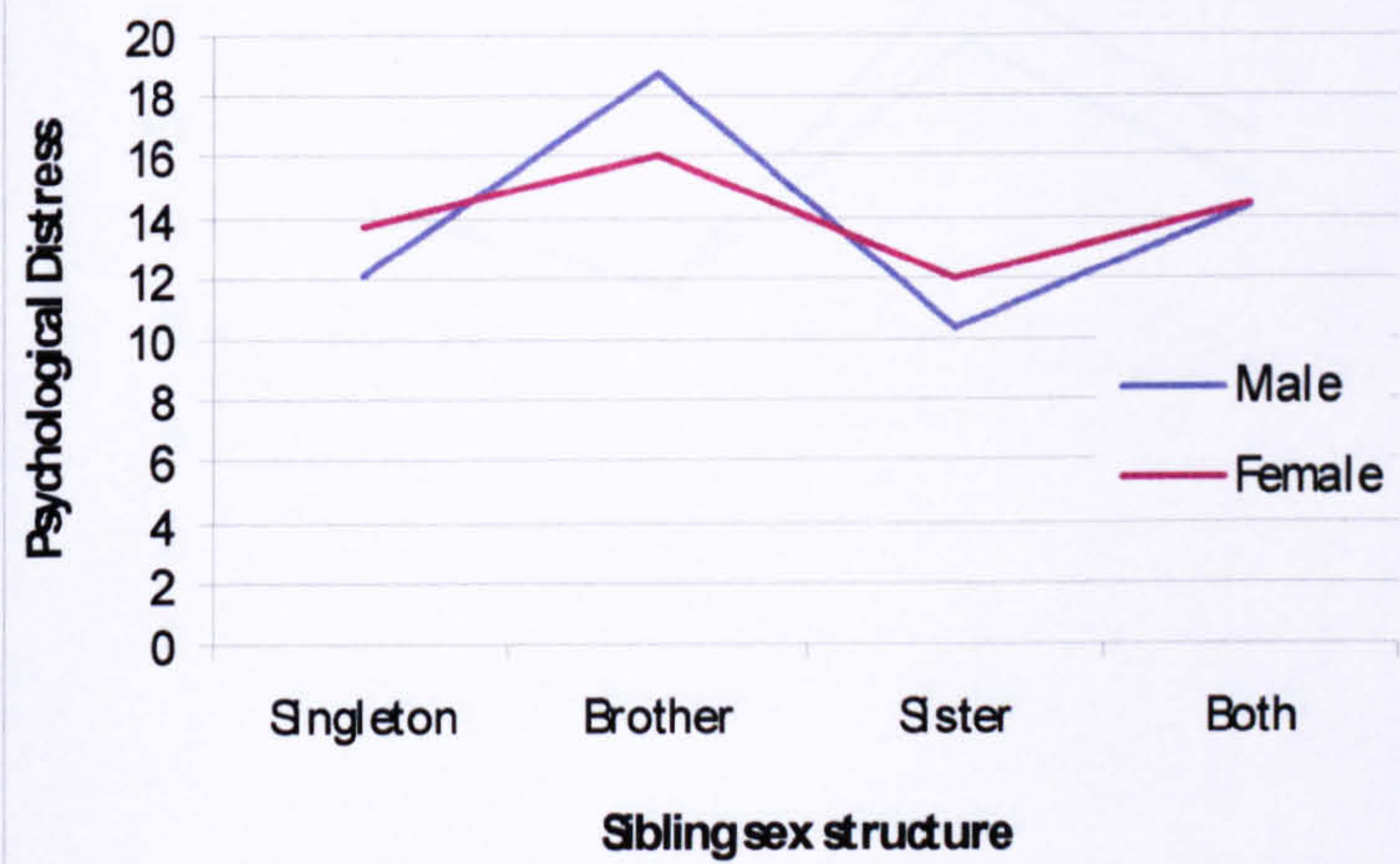
Interaction between sex and broken home on Perceived control



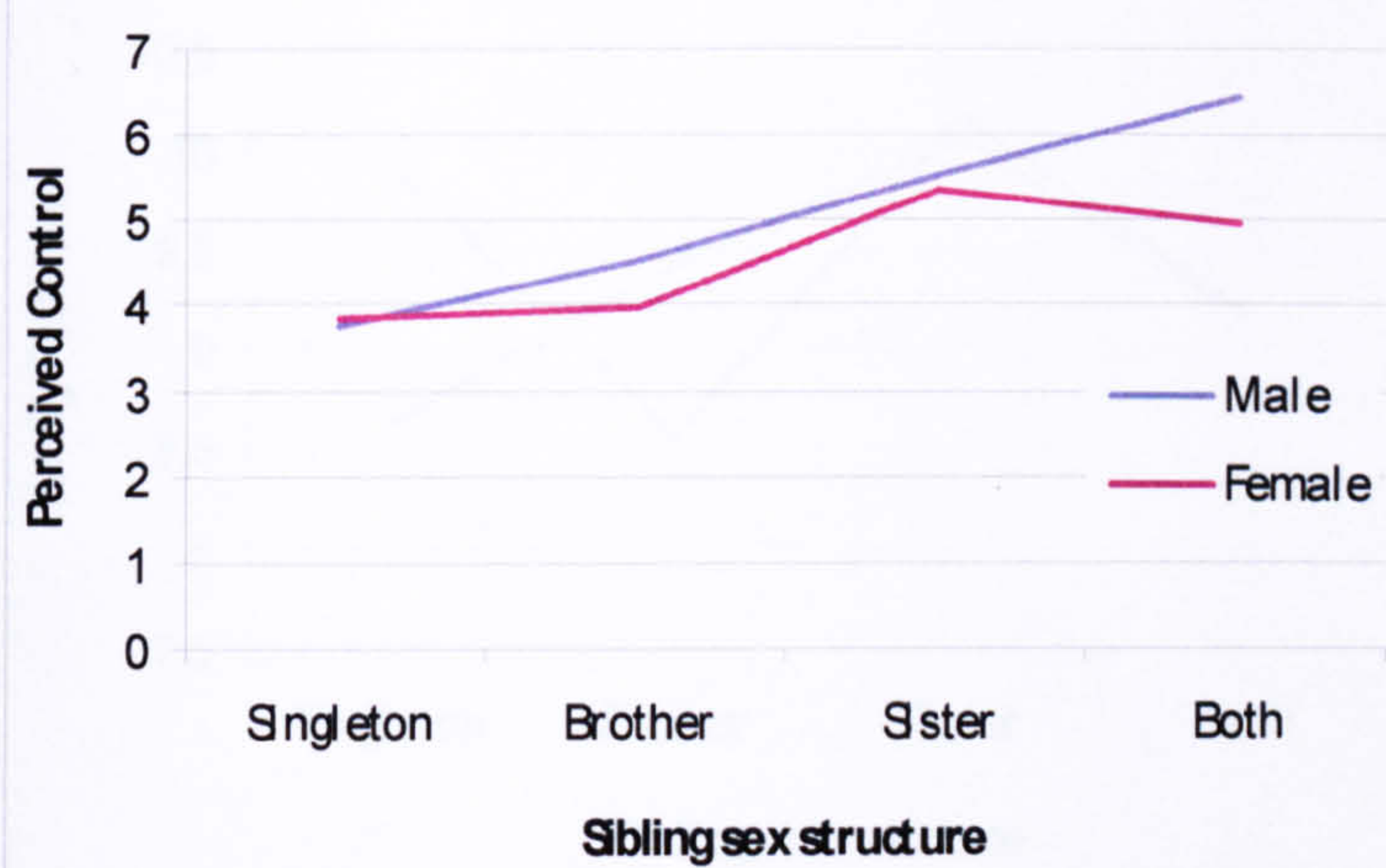
Interaction between sex and broken home on Family Personal Growth



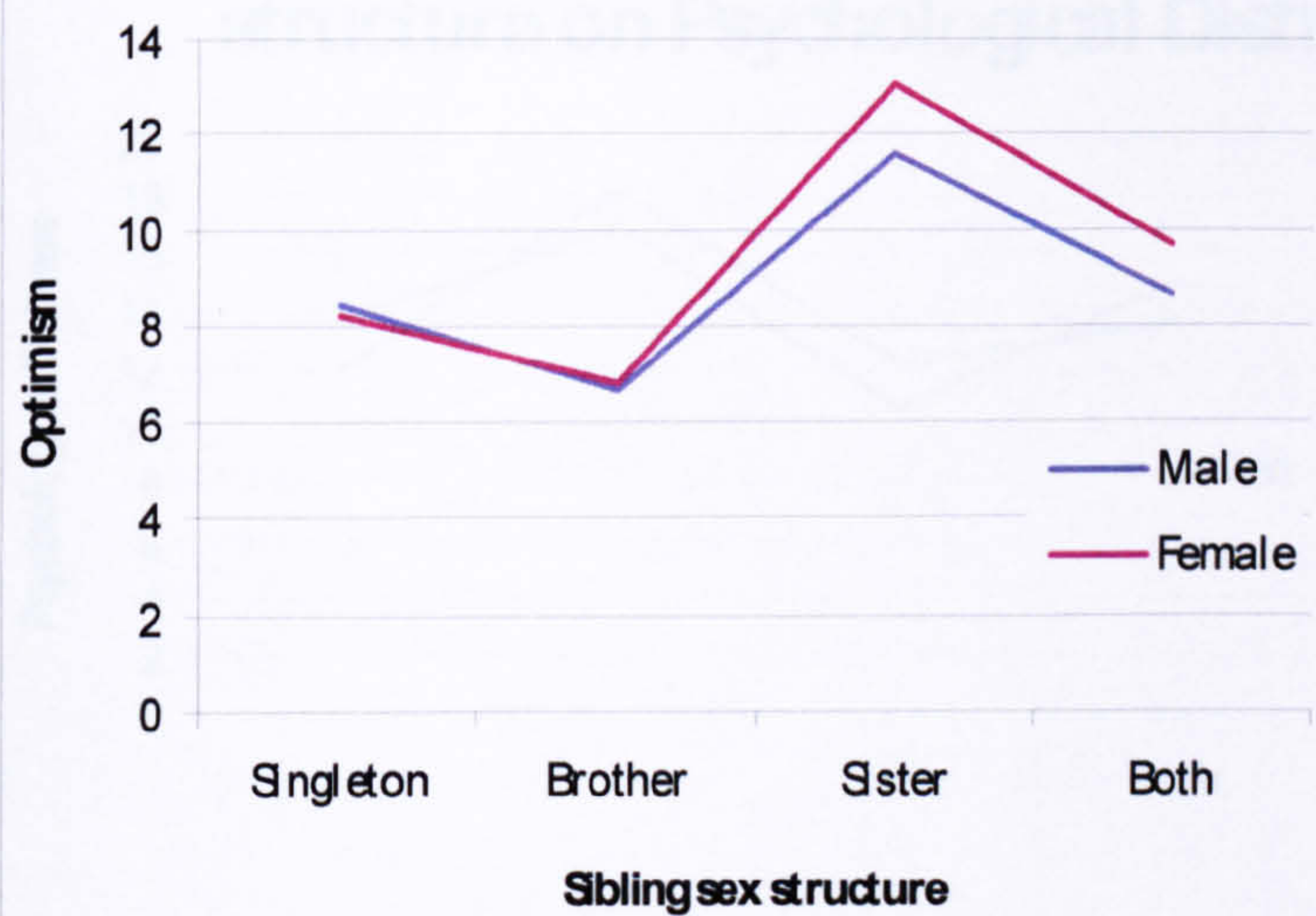
Interaction between sex and sibling sex structure on Psychological Distress



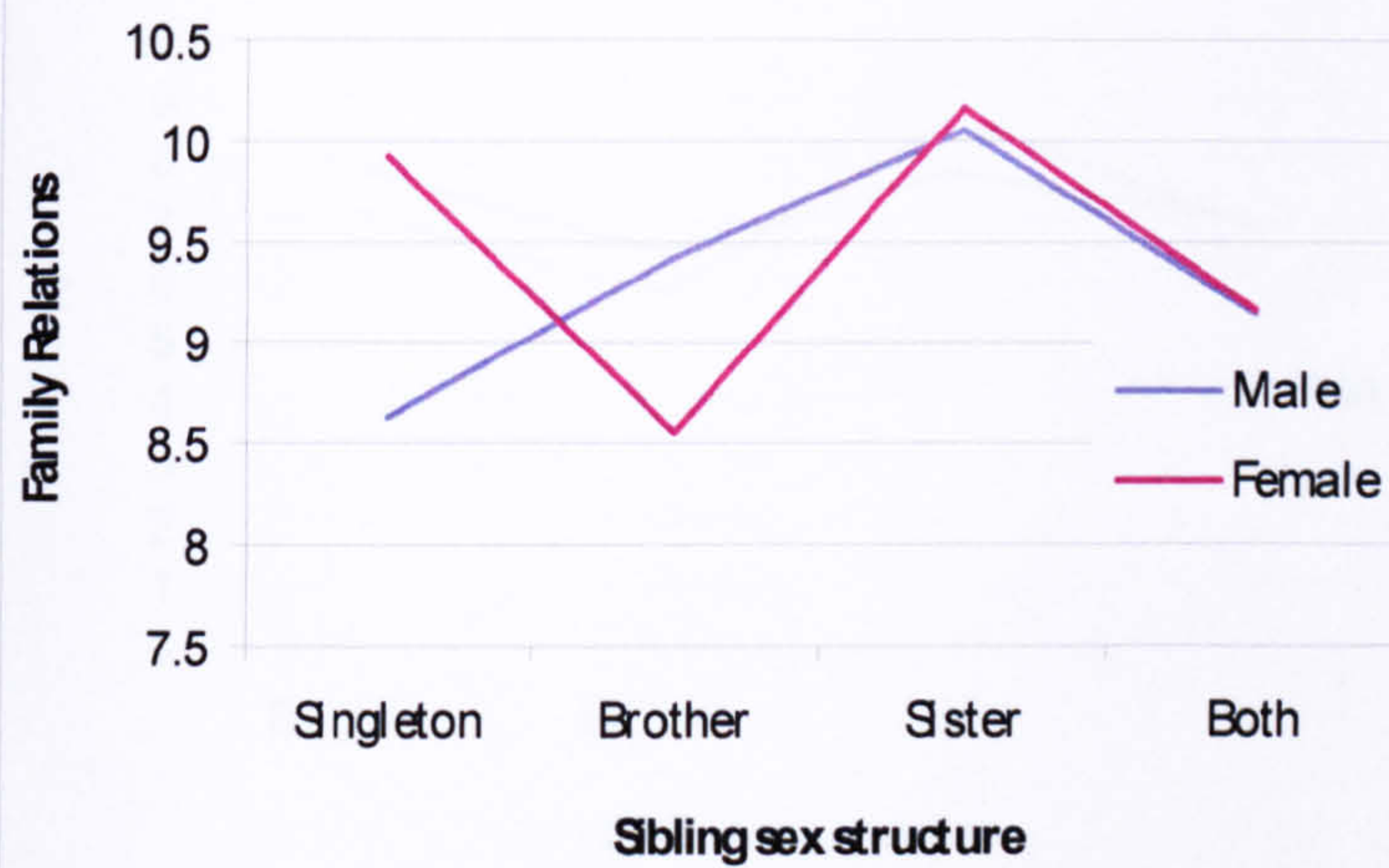
Interaction between sex and sibling sex structure on Perceived Control



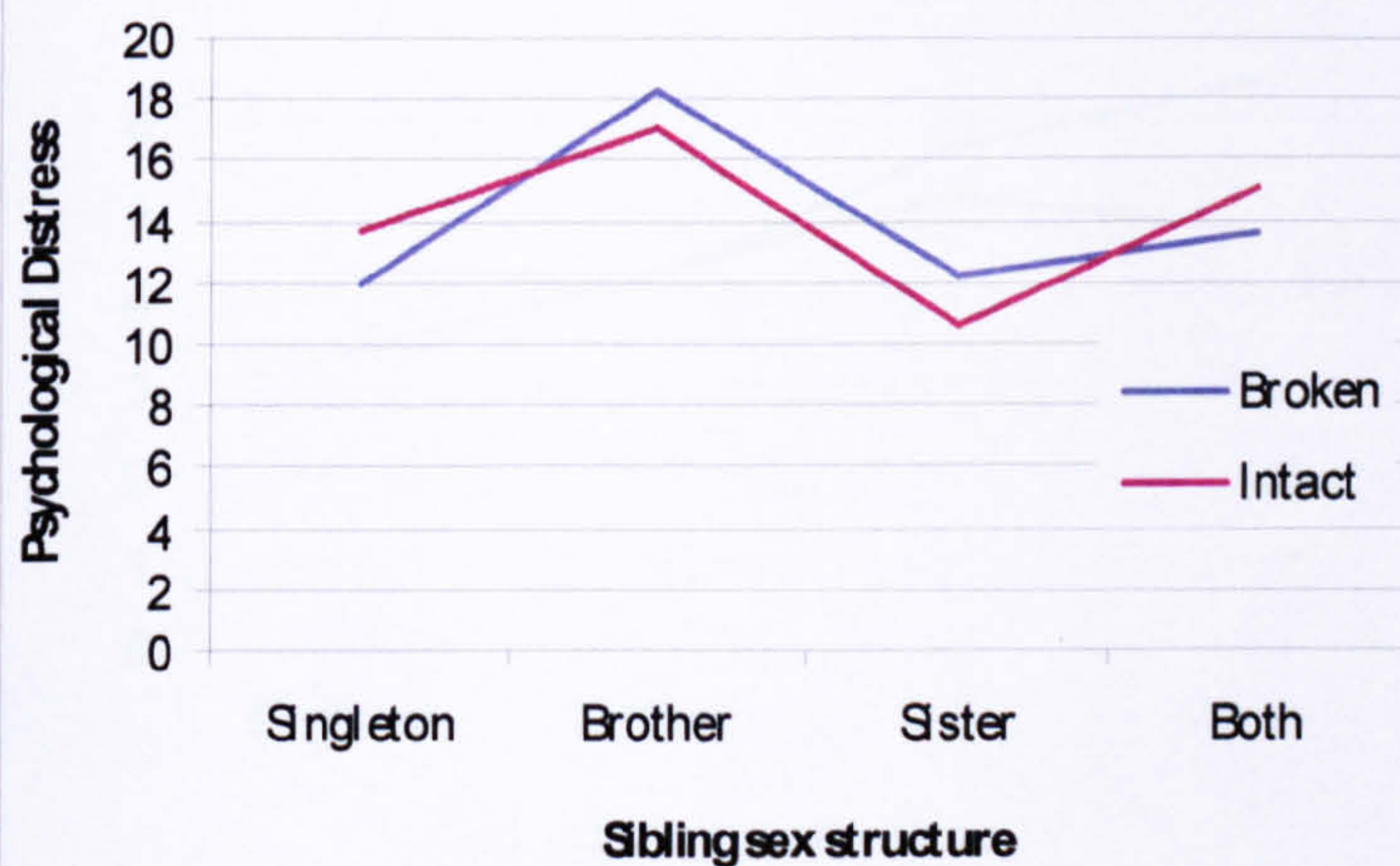
Interaction between sex and sibling sex structure on Optimism



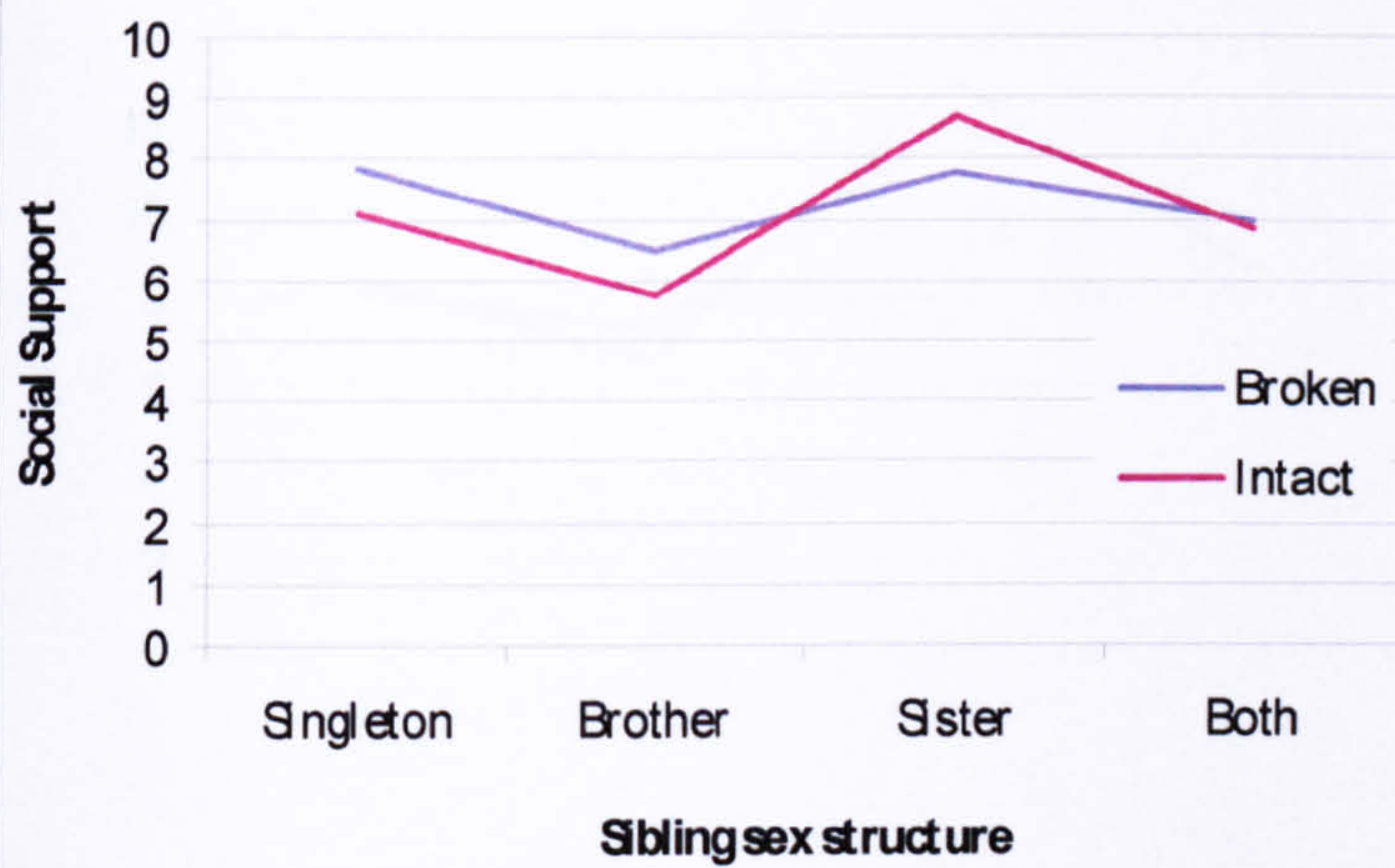
Interaction between sex and sibling sex structure on Family Relations



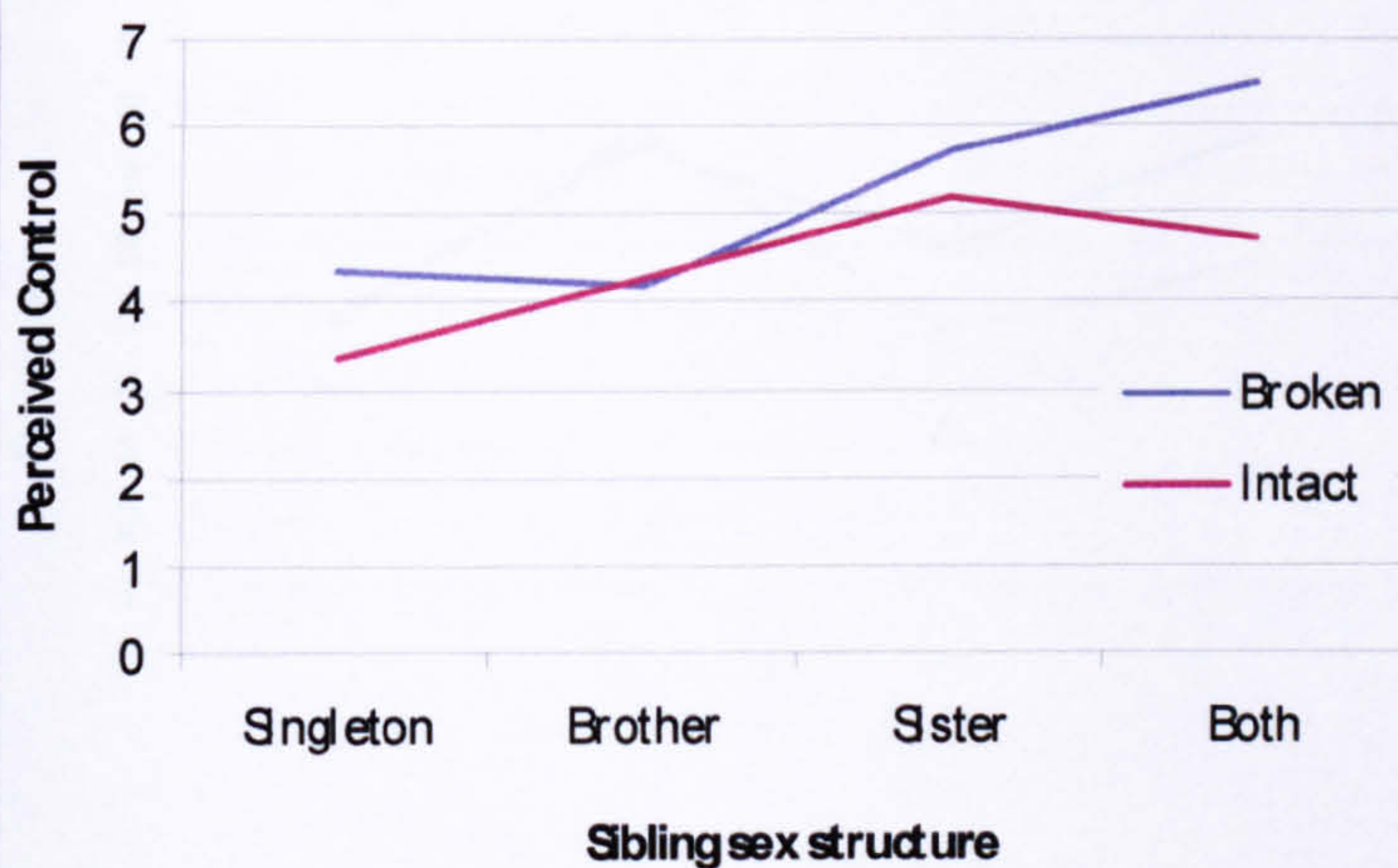
Interaction between intact/ non-intact homes and sibling sex structure on Psychological Distress



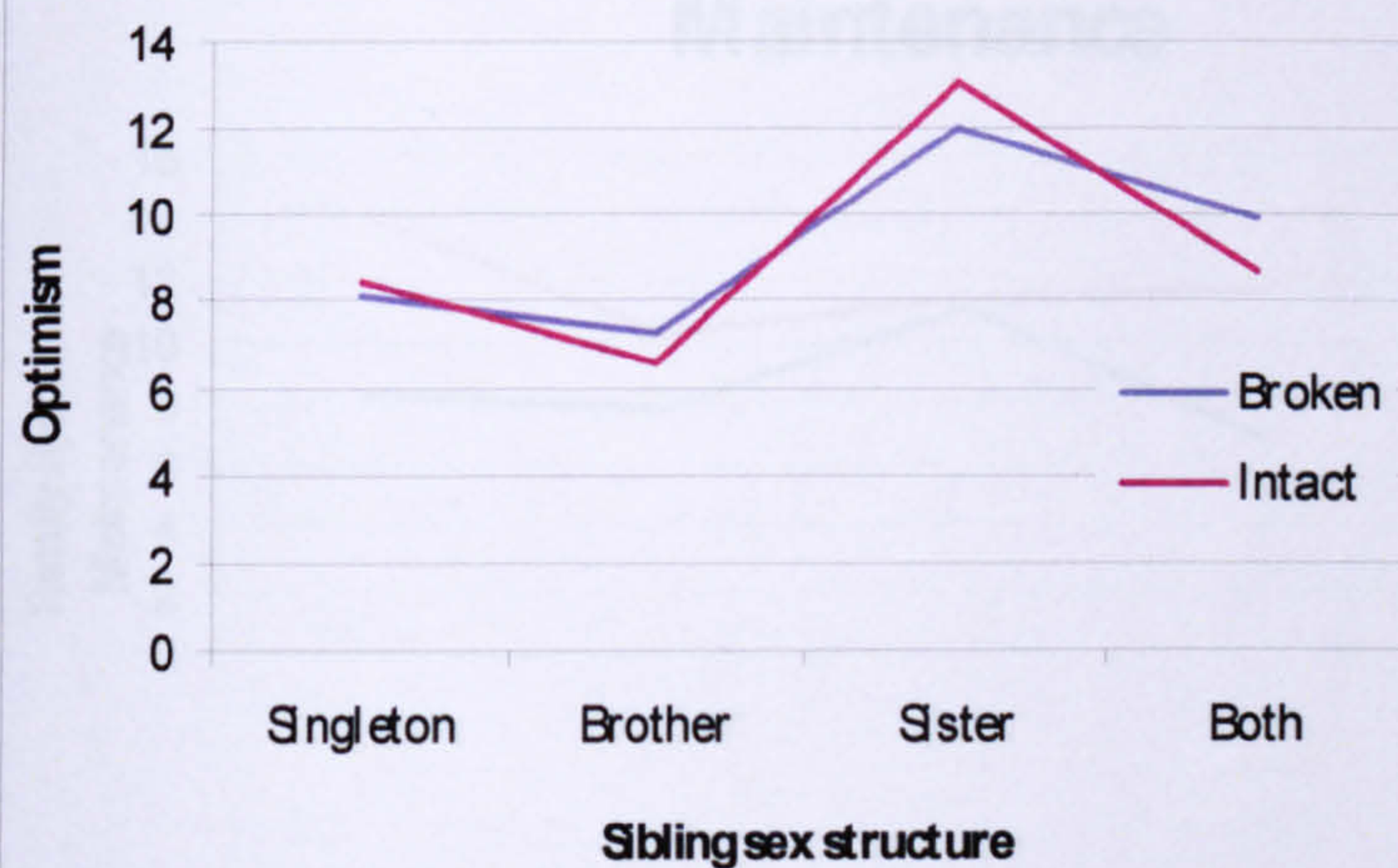
Interaction between intact/ non-intact homes and sibling sex structure on Social Support



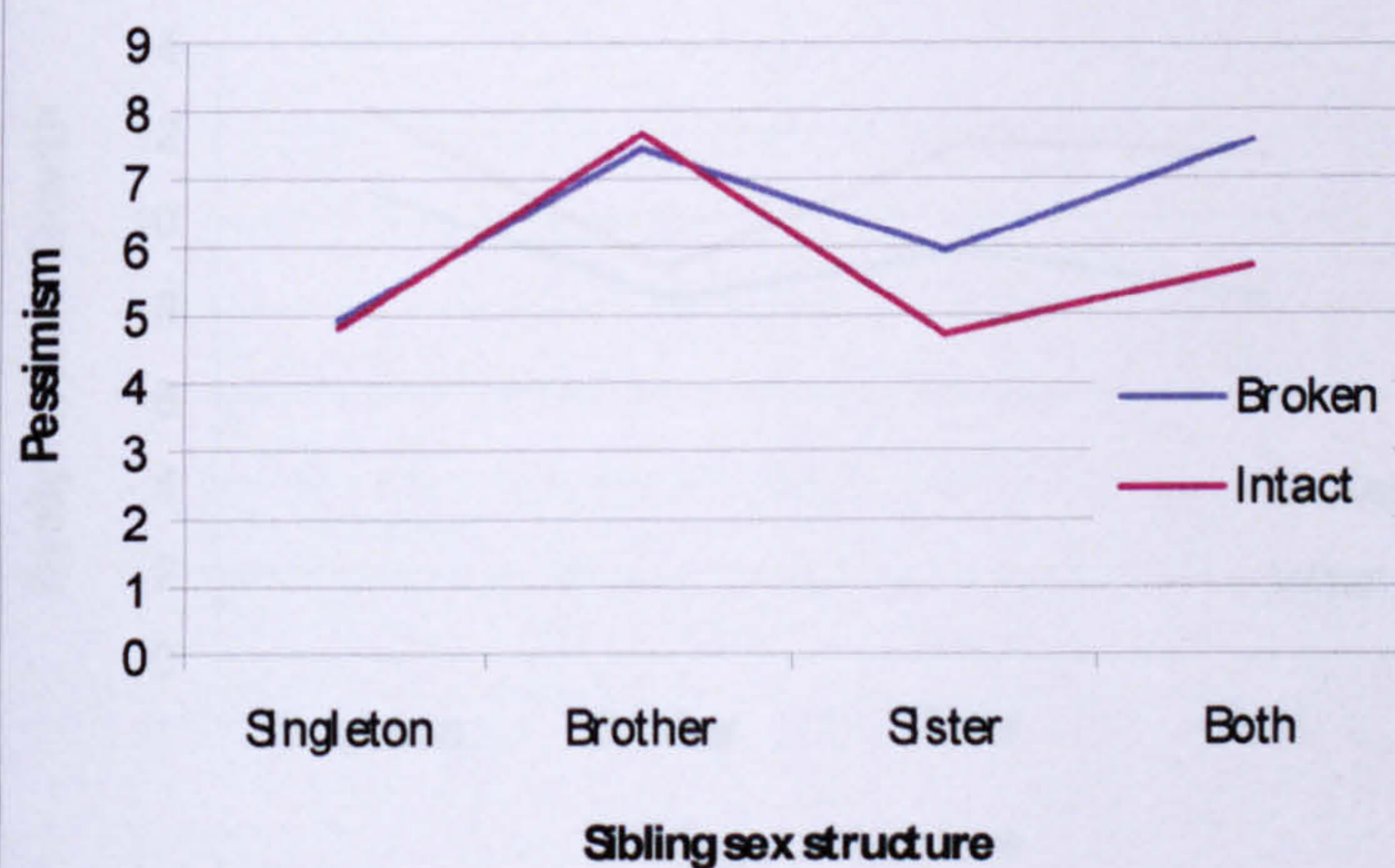
Interaction between intact/ non-intact homes and sibling sex structure on Perceived Control



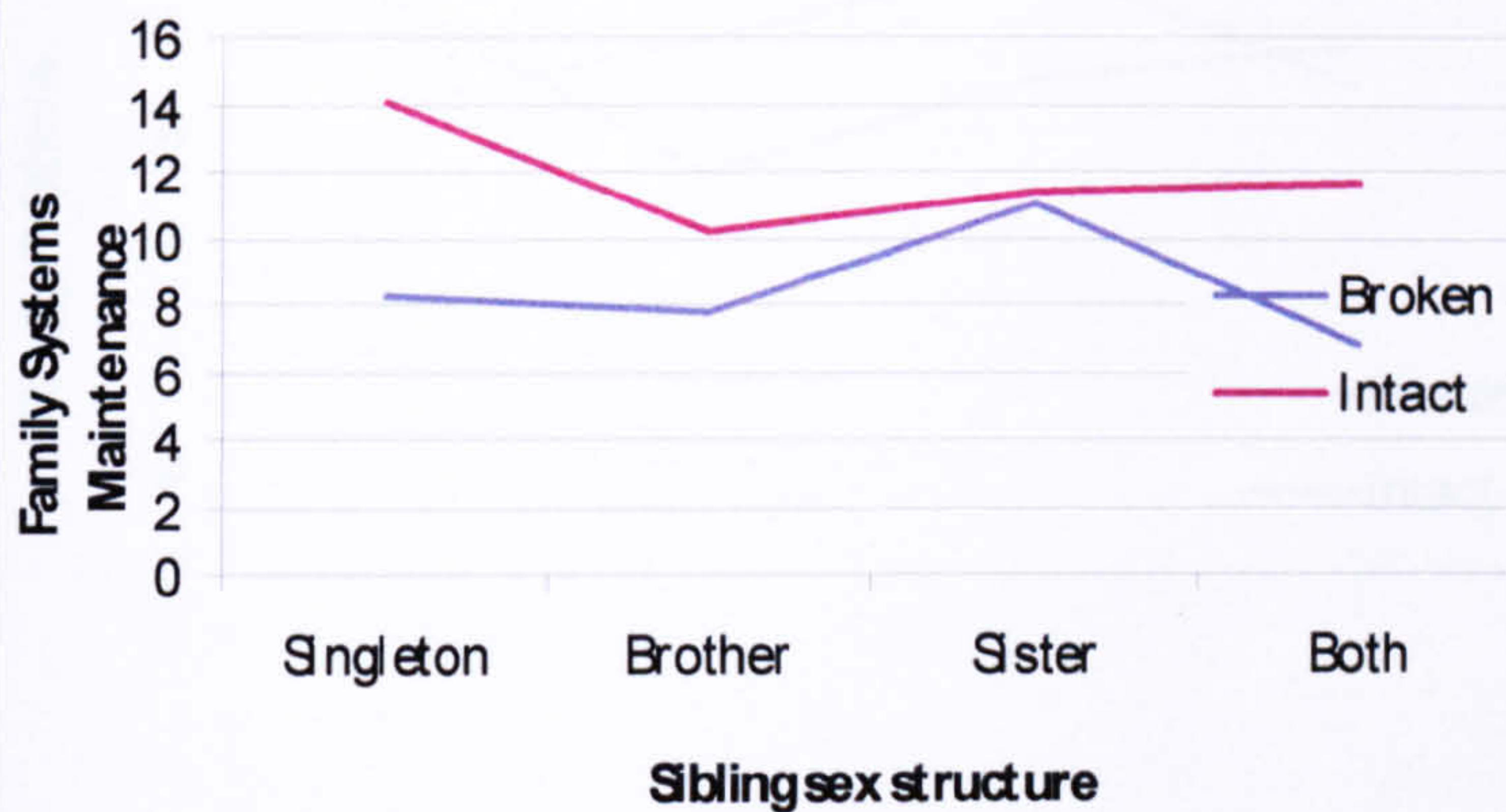
Interaction between intact/ non-intact homes and sibling sex structure on Optimism



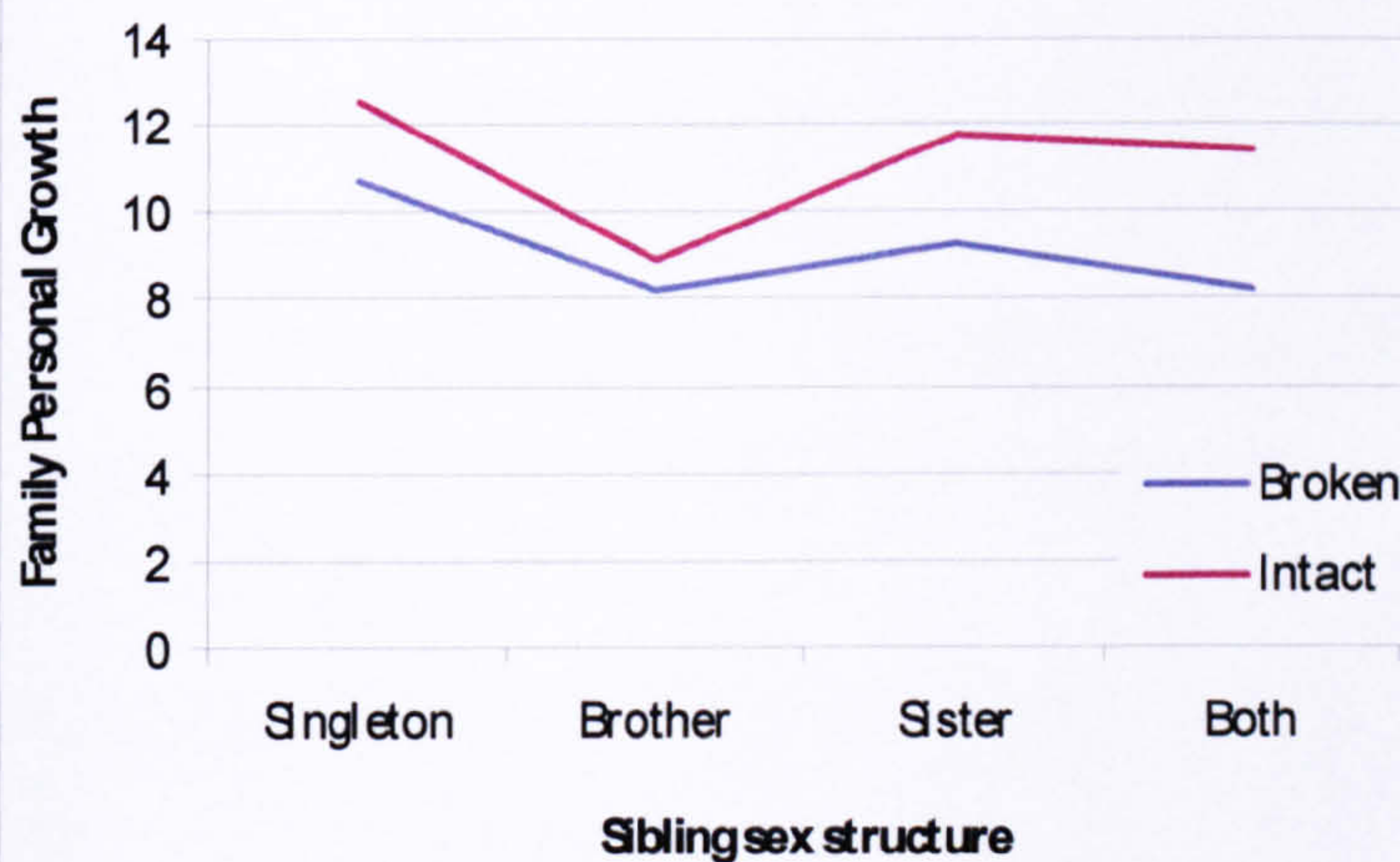
Interaction between intact/ non-intact homes and sibling sex structure on Pessimism



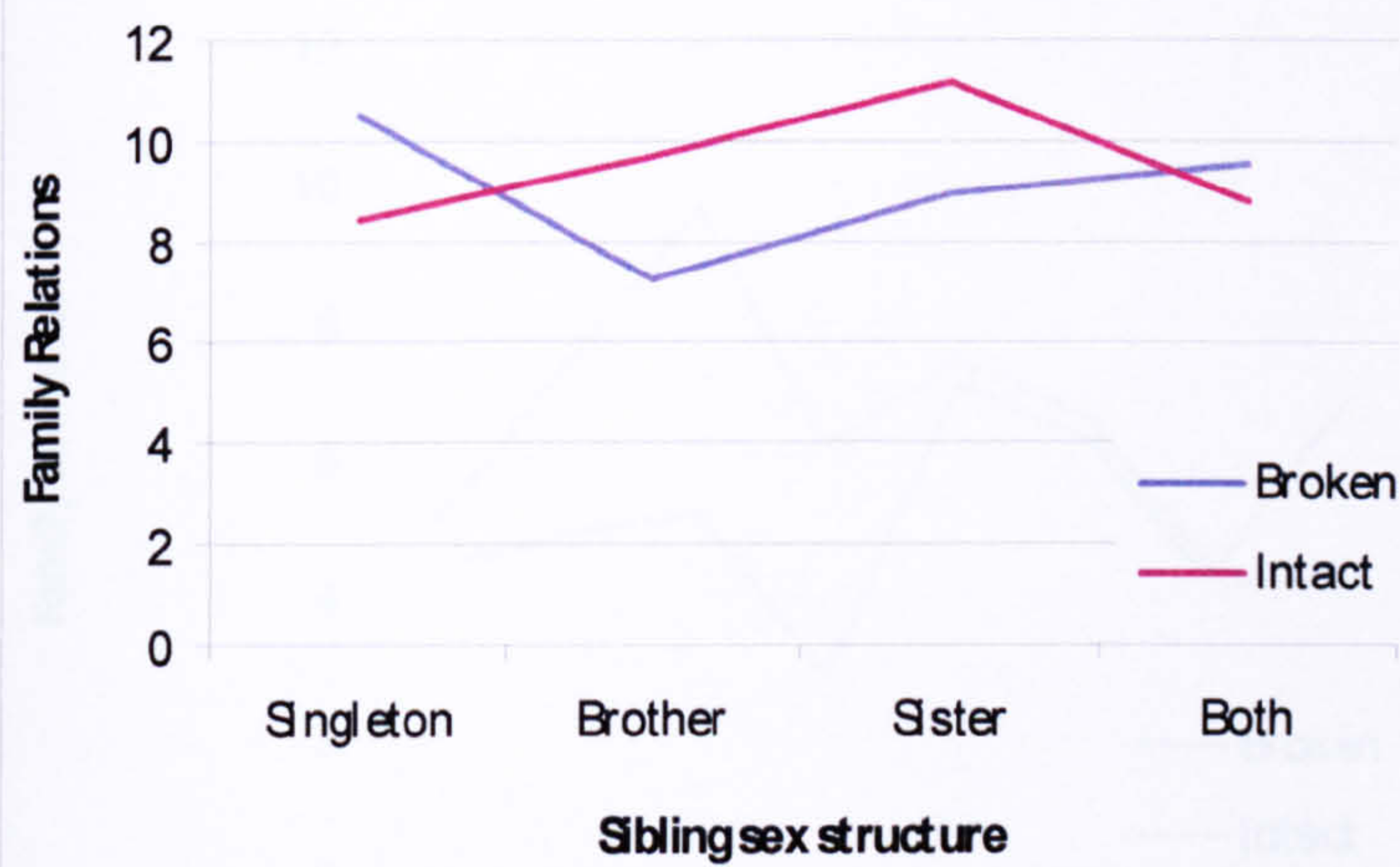
Interaction between intact/ non-intact homes and sibling sex structure on Family Systems Maintenance



Interaction between intact/ non-intact homes and sibling sex structure on Family Personal Growth



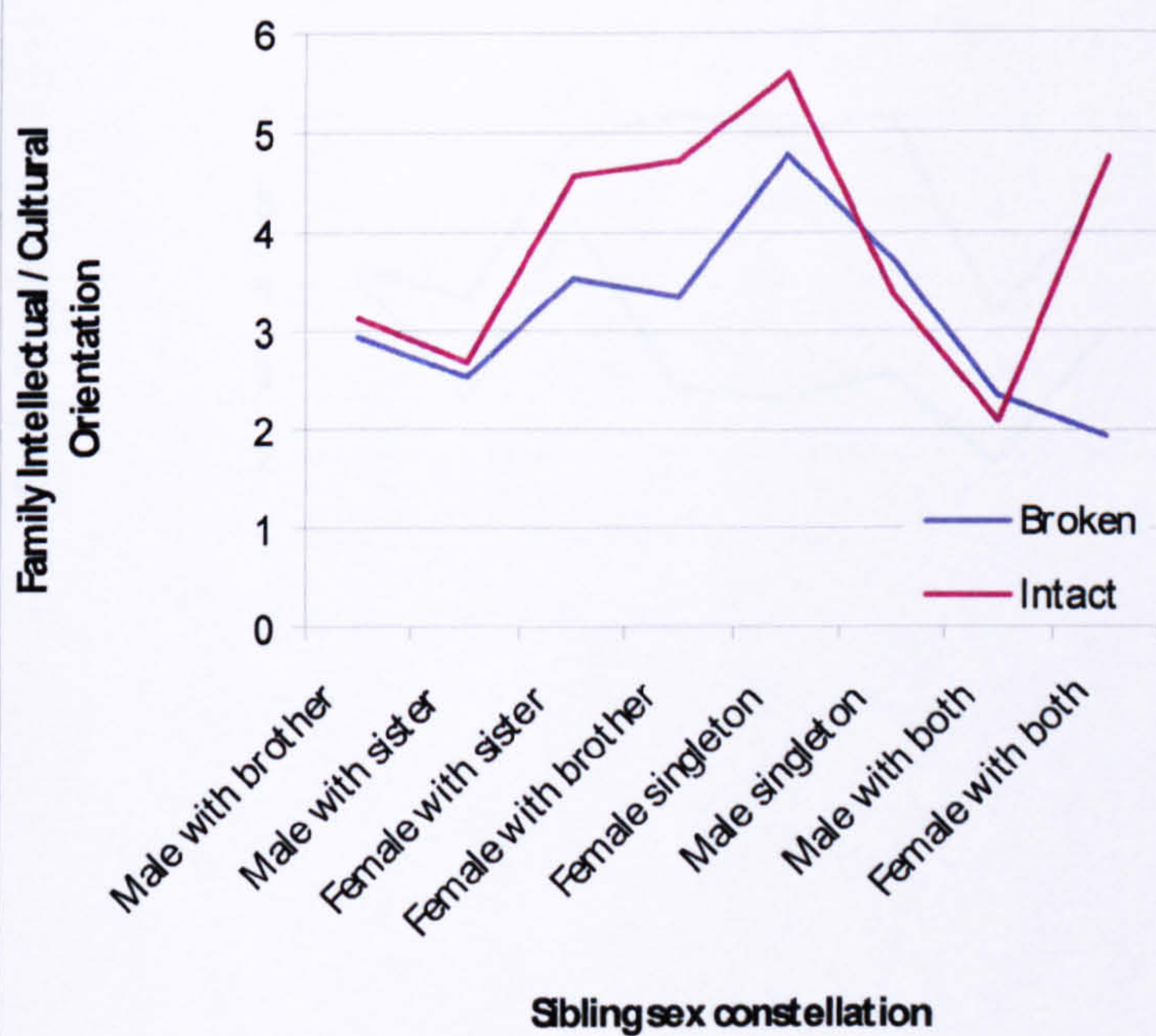
Interaction between intact/ non-intact homes and sibling sex structure on Family Relations



Interaction between intact/ non-intact homes and sibling sex constellation on Family Cohesion



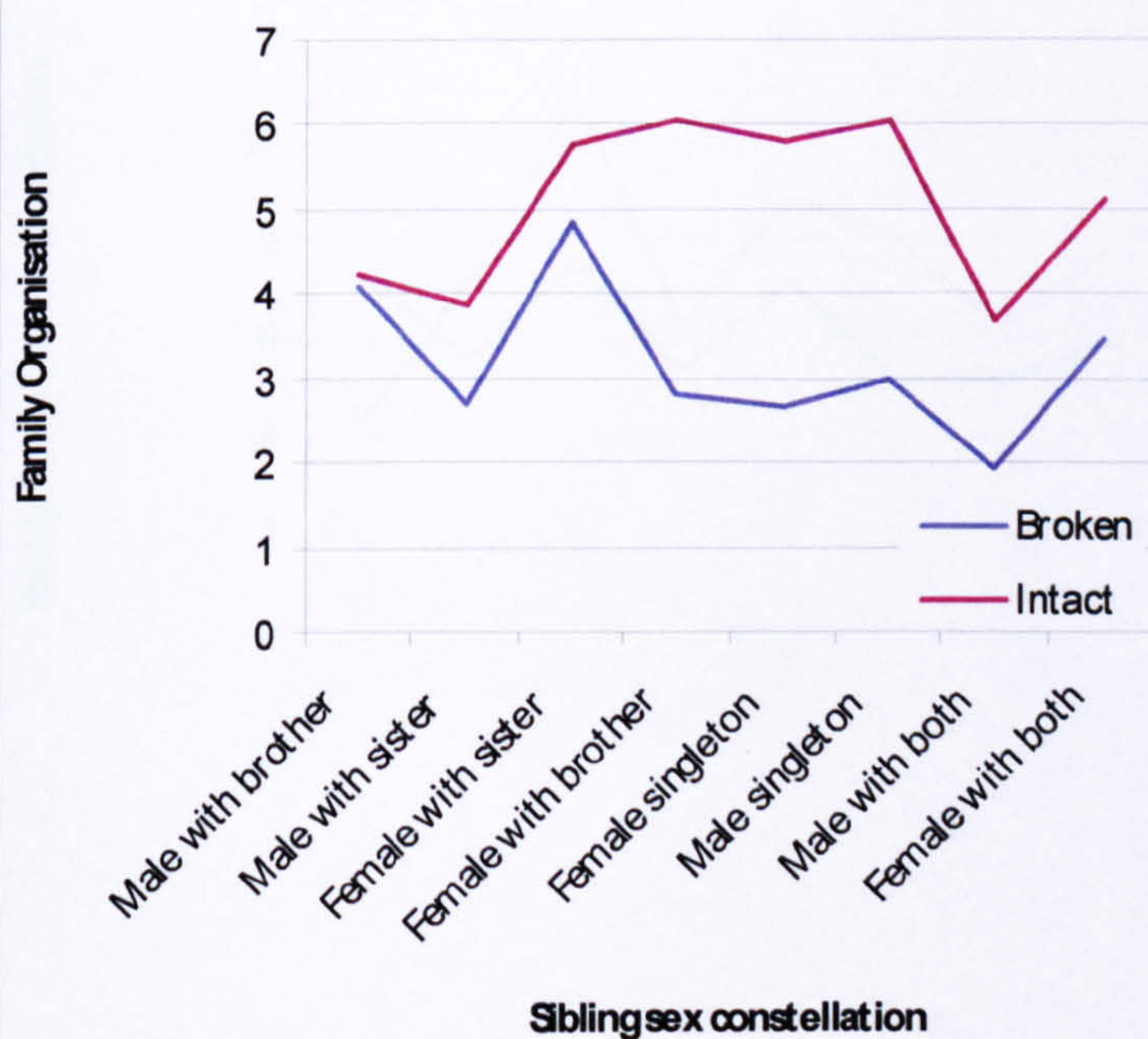
Interaction between intact/ non-intact homes and sibling sex constellation on Family Intellectual / Cultural Orientation



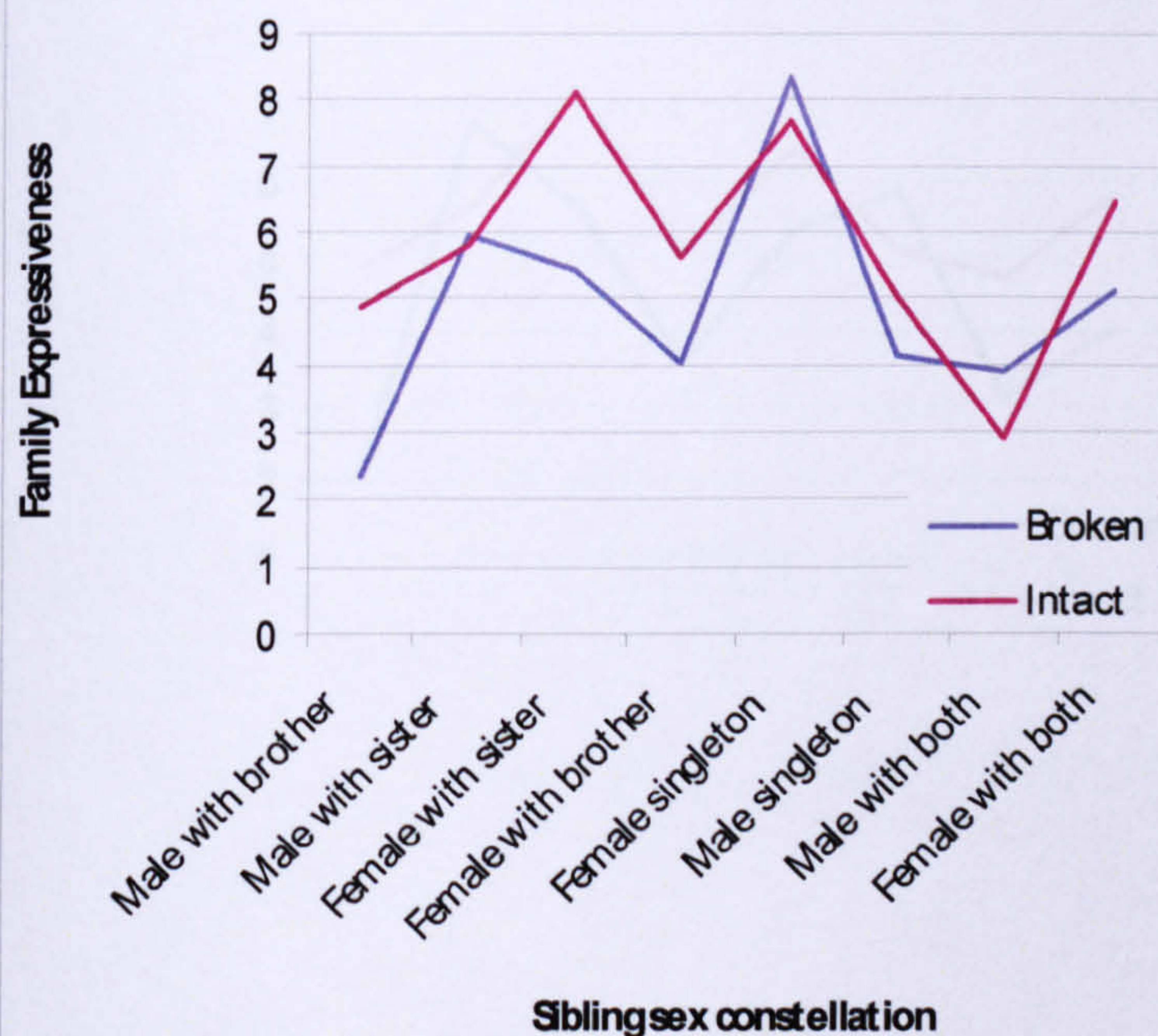
Interaction between intact/ non-intact homes and sibling sex constellation on Family Control



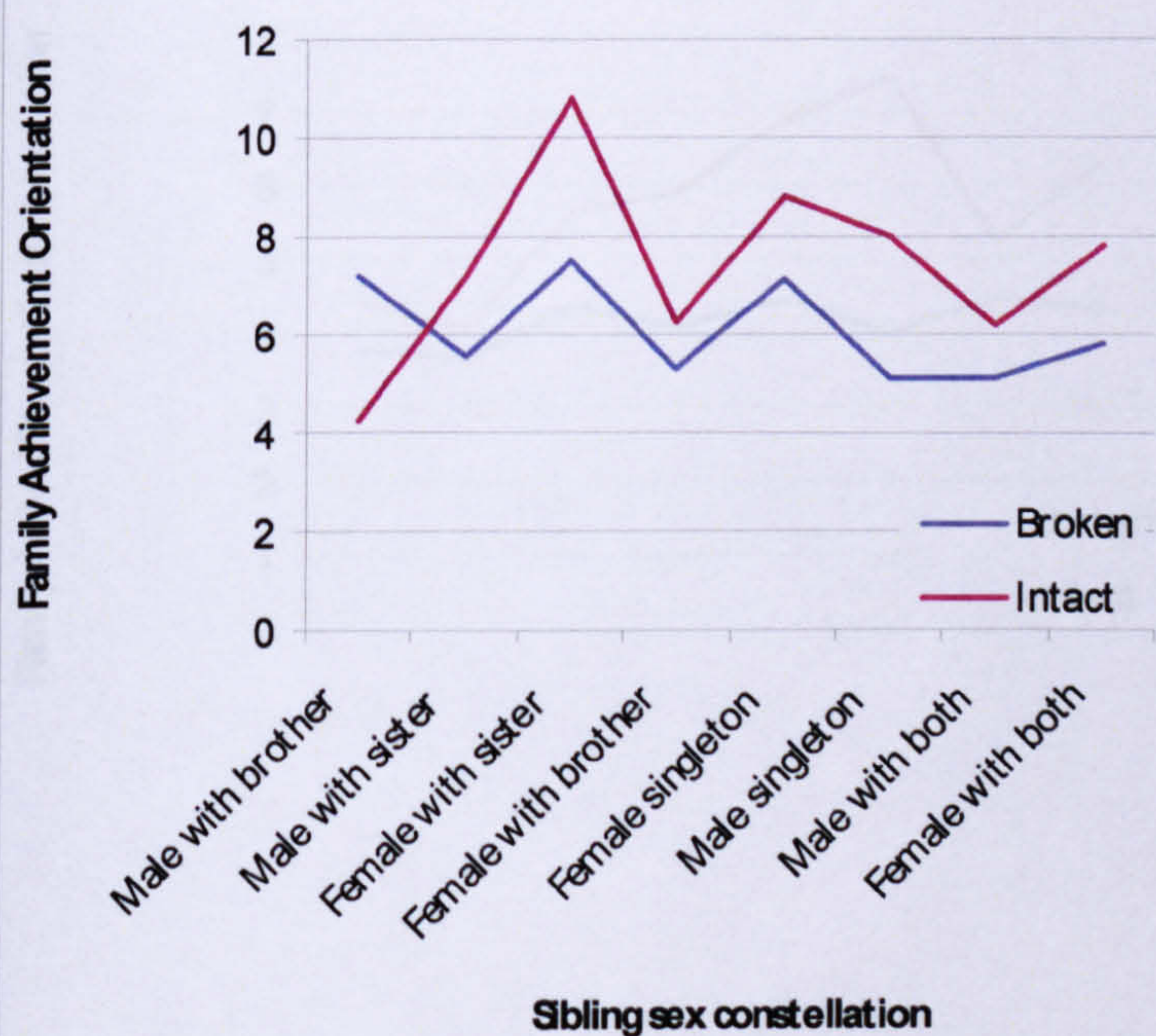
Interaction between intact/ non-intact homes and sibling sex constellation on Family Organisation



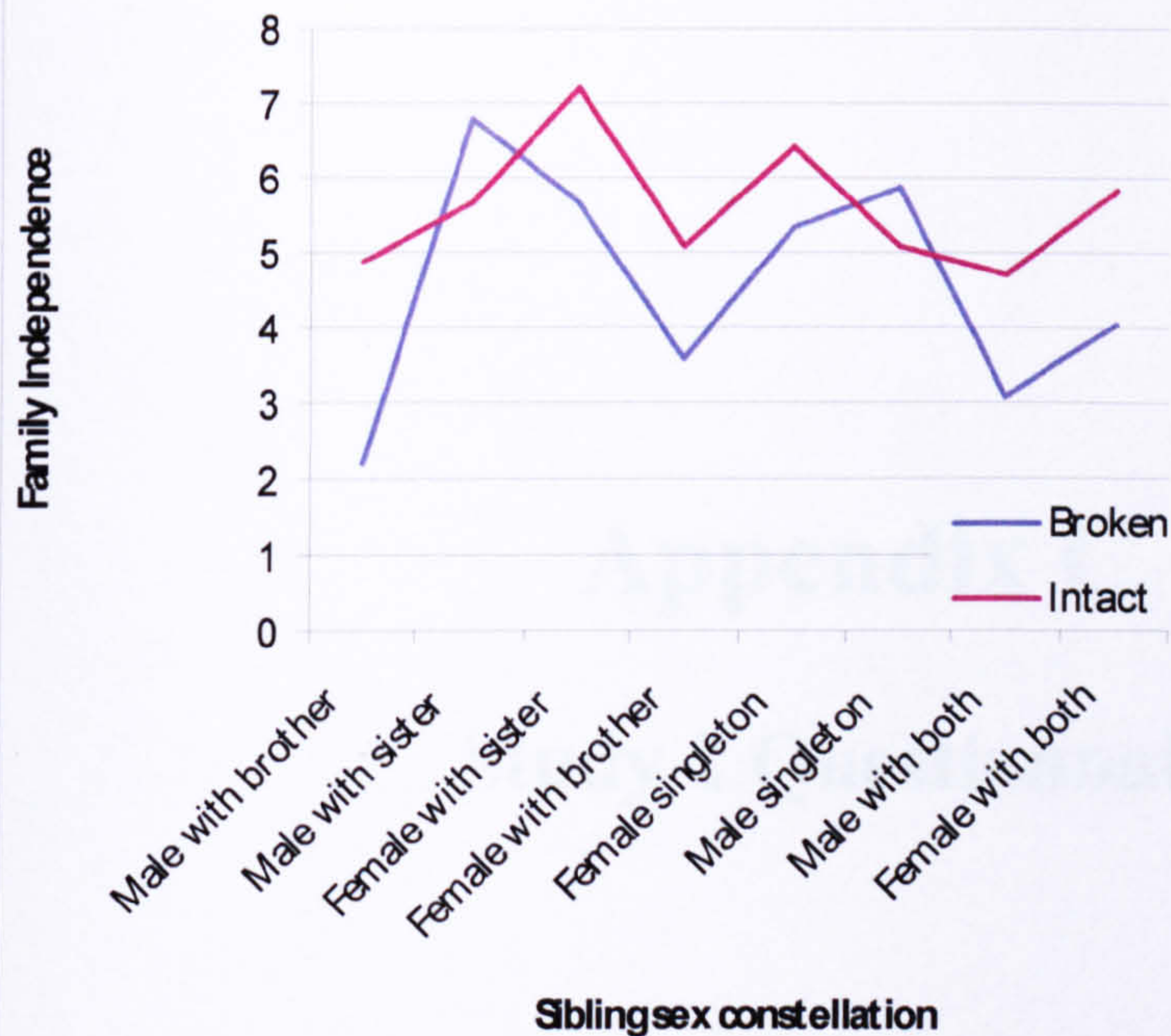
Interaction between intact/ non-intact homes and sibling sex constellation on Family Expressiveness



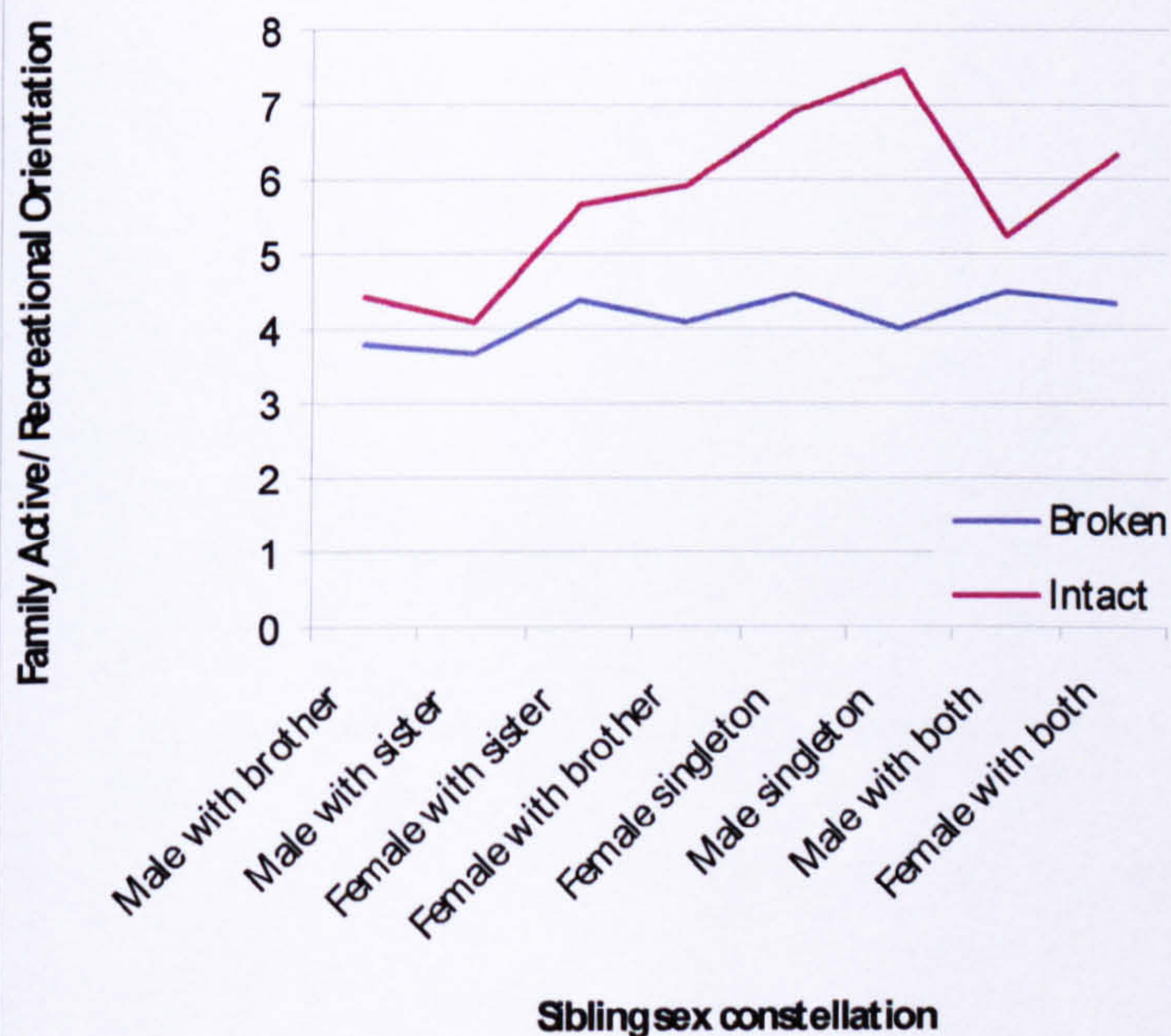
Interaction between intact/ non-intact homes and sibling sex constellation on Family Achievement Orientation



Interaction between intact/ non-intact homes and sibling sex constellation on Family Independence



Interaction between intact/ non-intact homes and sibling sex constellation on Family Active/ Recreational Orientation



Appendix C

Study 2 Questionnaire

Section 1: Please complete the personal details below before going on to the main questionnaire. Some of the questions may seem a little personal, but you can be assured that the information is anonymous, will be treated confidentially, and is purely in the interest of research.

- 1 Age _____ Sex _____
- 2 How many siblings do you have?
Brothers _____ *Sisters* _____
- 3 Have your biological parents remained together?
Yes _____ *No* _____
- 4 If *No*, what age were you when your parents separated? _____
- 5 Which parent did you live with after the separation?
Mother _____ *Father* _____ *Neither* _____
- 6 How often did you see the parent that you no longer lived with?
More Than Once A Week _____ *Once A Week* _____ *Once A Fortnight* _____
Once A Month _____ *Once A Year Or Less* _____ *Never* _____

Section 2: The following statements are about families and you are asked to decide which are true, which are sometimes true, and which are false of the family you grew up in. Please put a circle around *True* if the statement was true, *Sometimes True* if it was sometimes true, or *False* if it was false. Some statements may have been true for some members and false for others. If this happens please decide whether it was true, sometimes true or false for the majority and circle appropriately. There are no right or wrong answers and we are only interested in your impression of the family you grew up in.

- 1 Family members really helped and supported one another. *True* *Sometimes True* *False*

2	Family members often kept their feelings to themselves.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
3	We fought a lot in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
4	We felt it was important to be the best at whatever you did.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
5	Family members attended religious services fairly often.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
6	Activities in our family were pretty carefully planned.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
7	We said anything we wanted to around home.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
8	Family members rarely became openly angry.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
9	In our family, we were strongly encouraged to be independent.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
10	Getting ahead in life was very important in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
11	We rarely went to the cinema or the theatre.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
12	Friends often came over for dinner or to visit.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
13	We didn't say prayers in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
14	We were generally very neat and orderly.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
15	There were very few rules to follow in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
16	It was hard to "blow off steam" at home without upsetting someone.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
17	Family members sometimes got so angry they threw things.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>

18	Learning about new and different things was very important to us.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
19	Nobody in our family was active in sports, or leisure pursuits.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
20	We often talked about the meaning of religion in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
21	There was a feeling of togetherness in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
22	We told each other about our personal problems.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
23	Family members hardly ever lost their tempers.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
24	We came and went as we wanted to in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
25	We believed in competition and "may the best person win."	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
26	We were not that interested in cultural activities.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
27	We often went to movies, sports events, etc. together.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
28	We didn't believe in heaven or hell.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
29	Being on time was very important in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
30	There were set ways of doing things at home.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
31	Family members often criticised each other.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
32	There was very little privacy in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
33	We always strove to do things just a little better the next time.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>

34	We rarely had intellectual discussions.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
35	Everyone in our family had a hobby or two.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
36	There was a strong emphasis on following rules in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
37	Family members always backed each other.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
38	Someone usually got upset if you complained in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
39	Family members sometimes hit each other.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
40	Family members rarely worried about job promotions, school grades, etc.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
41	Family members were not very involved in recreational activities outside work or school.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
42	Family members made sure their rooms were neat.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
43	There was very little group spirit in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
44	Money and paying bills was openly talked about in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
45	Family members strongly encouraged each other to stand up for their rights.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
46	In our family, we didn't try that hard to succeed.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
47	Family members sometimes attended courses or took lessons for some hobby or interest (outside of school).	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
48	Each person's duties were clearly defined in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>

49	We could do whatever we wanted to in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
50	We really got along well with each other.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
51	It was hard to be by yourself without hurting someone's feelings in our household.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
52	Watching T.V. was more important than reading in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
53	Religion was very important in our home.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
54	There was plenty of time and attention for everyone in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
55	There were a lot of spontaneous discussions in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
56	In our family, we believed you don't ever get anywhere by raising your voice.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
57	We were not really encouraged to speak up for ourselves in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
58	Family members were often compared with others as to how well they were doing at work or school.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
59	Family members really liked music, art and literature.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
60	Family members believed that if you sin you will be punished.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
61	Dishes were usually done immediately after eating.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
62	You couldn't get away with much in our family.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>

Section 3: Please circle either *Yes*, *Possibly* or *No* for the following statements as appropriate.

- | | | | | |
|----|--|------------|-----------------|-----------|
| 1 | Do you have someone you can rely on to make you feel relaxed when you are under pressure? | <i>Yes</i> | <i>Possibly</i> | <i>No</i> |
| 2 | Do you have someone who accepts you totally, including both your good and bad points? | <i>Yes</i> | <i>Possibly</i> | <i>No</i> |
| 3 | Is there someone you can rely on to help sort out unpleasant disagreements if they occur? | <i>Yes</i> | <i>Possibly</i> | <i>No</i> |
| 4 | Do you have someone to turn to in an emergency? | <i>Yes</i> | <i>Possibly</i> | <i>No</i> |
| 5 | Do you ever feel alone and isolated? | <i>Yes</i> | <i>Possibly</i> | <i>No</i> |
| 6 | Do you have someone you can count on to distract you from your worries in times of stress? | <i>Yes</i> | <i>Possibly</i> | <i>No</i> |
| 7 | Is there someone who will care about you regardless of what is happening to you? | <i>Yes</i> | <i>Possibly</i> | <i>No</i> |
| 8 | Do you have someone who can give you practical support when you have a problem? | <i>Yes</i> | <i>Possibly</i> | <i>No</i> |
| 9 | is there someone who can make you feel good about yourself? | <i>Yes</i> | <i>Possibly</i> | <i>No</i> |
| 10 | Is there someone who turns to you when they have emotional problems? | <i>Yes</i> | <i>Possibly</i> | <i>No</i> |
| 11 | Is there anyone who asks you for advice about everyday practical problems? | <i>Yes</i> | <i>Possibly</i> | <i>No</i> |
| 12 | Do you enjoy your own company? | <i>Yes</i> | <i>Possibly</i> | <i>No</i> |

Section 4: Below are a number of statements about how various topics affect your personal beliefs. Please circle the response that most appropriately describes your beliefs.

1 My life is controlled by outside actions and events..

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Then Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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2 A great deal of what happens to me is probably just a matter of chance.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Then Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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3 Everyone knows that luck or chance determines one's future.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Then Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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4 I can control my problem(s) only if I have outside support.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Then Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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5 When I make plans I am almost certain I can make them work.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Then Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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6 My problem(s) will dominate me all my life.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Then Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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7 My mistakes and problems are my responsibility to deal with.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Then Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
---------------------------	--------------	---	---	-----------------	------------------------------

8 Becoming a success is a matter of hard work, luck has nothing to do with it.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
---------------------------	--------------	---	---	-----------------	------------------------------

9 I can anticipate difficulties and take action to avoid them.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
---------------------------	--------------	---	---	-----------------	------------------------------

10 People are victims of circumstances beyond their control.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
---------------------------	--------------	---	---	-----------------	------------------------------

11 To continually manage my problems I need professional help.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
---------------------------	--------------	---	---	-----------------	------------------------------

12 When I am under stress, the tightness in my muscles is due to things outside my control.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
---------------------------	--------------	---	---	-----------------	------------------------------

13 I believe a person can really be master of his / her own fate.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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14 It is impossible to control my irregular and fast breathing when I am having difficulties.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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15 I understand why my problem(s) vary so much from one occasion to the next.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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16 I am confident of being able to deal successfully with future problems.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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17 In my case maintaining control over my problem(s) is due mostly to luck.

<i>Strongly Agree</i>	<i>Agree</i>	<i>More Agree Than Disagree</i>	<i>More Disagree Than Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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Section 5: Using the scale below, please circle the most appropriate answer for you under each statement.

1 In uncertain times, I usually expect the best.

<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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2 It's easy for me to relax.

<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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3 If something can go wrong for me, it will.

<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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4 I always look on the bright side.

<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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5 I'm always optimistic about my future.

<i>Strongly Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
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6 I enjoy my friends a lot.

Strongly Agree

Agree

Disagree

Strongly Disagree

7 It's important for me to keep busy.

Strongly Agree

Agree

Disagree

Strongly Disagree

8 I hardly ever expect things to go my way.

Strongly Agree

Agree

Disagree

Strongly Disagree

9 Things never work out the way I want them to.

Strongly Agree

Agree

Disagree

Strongly Disagree

10 I don't get upset easily.

Strongly Agree

Agree

Disagree

Strongly Disagree

11 I'm a believer in the idea that 'every cloud has a silver lining'.

Strongly Agree

Agree

Disagree

Strongly Disagree

12 I rarely count on good things happening to me.

Strongly Agree

Agree

Disagree

Strongly Disagree

Section 6: For the following questions please circle the most appropriate answer under each statement. Please remember there are no 'right' or 'wrong' answers.

1 Hard work is something I like to avoid.

Always

Very Often

Sometimes

Rarely

Never

2 If there is an opportunity to earn money I am usually there.

Always

Very Often

Sometimes

Rarely

Never

3 I think I would enjoy having authority over other people.

Always

Very Often

Sometimes

Rarely

Never

4	I hate to see bad workmanship.	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
5	I try harder when I'm in competition with other people.	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
6	I would like an important job where people looked up to me.	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
7	I would rather do something at which I feel confident and relaxed than something that is challenging and difficult.	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
8	I can easily sit for a long time doing nothing.	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
9	I would be willing to work for a salary that was below average if the job was pleasant.	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
10	If given the chance I would make a good leader of people.	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
11	Part of the satisfaction of doing something is seeing how good the finished product looks.	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
12	It annoys me when others perform better than I do.	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
13	I like talking to people who are important.	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
14	I would rather learn easy fun games than difficult thought games.	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
15	I must admit I often do as little work as I can get away with.	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>

- 16 The kind of work I like is the one that pays top salary for top performance.
- Always Very Often Sometimes Rarely Never*
- 17 I think I am usually a leader in my group.
- Always Very Often Sometimes Rarely Never*
- 18 It is no use playing a game when you are playing with someone as good as yourself.
- Always Very Often Sometimes Rarely Never*
- 19 I judge my performance on whether I do better than others rather than on just getting a good result.
- Always Very Often Sometimes Rarely Never*
- 20 I want to be an important person in the community.
- Always Very Often Sometimes Rarely Never*
- 21 If I am not good at something I would rather keep struggling to master it than move on to something I may be good at.
- Always Very Often Sometimes Rarely Never*
- 22 I am basically a lazy person.
- Always Very Often Sometimes Rarely Never*
- 23 As long as I am paid for my work, I don't mind working while others are having fun.
- Always Very Often Sometimes Rarely Never*
- 24 I enjoy planning things and deciding what others should do.
- Always Very Often Sometimes Rarely Never*
- 25 I get a sense of satisfaction out of being able to say I have done a very good job on a project.
- Always Very Often Sometimes Rarely Never*
- 26 If I get a good result it doesn't matter if others do better.
- Always Very Often Sometimes Rarely Never*
- 27 I like to be admired for my achievements.

	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
28	I prefer to work in situations that require a high level of skill.				
	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
29	I often put off until tomorrow things I know I should do today.				
	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
30	I frequently think about what I might do to earn a great deal of money.				
	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
31	I like to give orders and get things going.				
	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
32	I find satisfaction in working as well as I can.				
	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
33	I would never allow others to get the credit for what I have done.				
	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
34	I dislike being the centre of attention.				
	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
35	I more often attempt tasks that I am not sure I can do than tasks I know I can do.				
	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
36	I easily get bored if I don't have something to do.				
	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
37	It is important to me to make lots of money.				
	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
38	People take notice of what I say.				
	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
39	I find satisfaction in exceeding my previous performance even if I don't outperform others.				
	<i>Always</i>	<i>Very Often</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>

40 To be a real success I feel I have to do better than everyone I come up against.

Always Very Often Sometimes Rarely Never

41 I like to have people come to me for advice.

Always Very Often Sometimes Rarely Never

42 I like to be busy all the time.

Always Very Often Sometimes Rarely Never

43 I like to work hard.

Always Very Often Sometimes Rarely Never

44 The most important thing about the job is the pay.

45 When a group I belong to plans an activity, I would rather direct it myself than just help out and have someone else organise it.

Always Very Often Sometimes Rarely Never

46 There is satisfaction in a job well done.

Always Very Often Sometimes Rarely Never

47 It is important to perform better than others on a task.

Always Very Often Sometimes Rarely Never

48 I would find satisfaction in having influence over others because of my position in the community.

Always Very Often Sometimes Rarely Never

49 I feel like giving up quickly when things go wrong.

Always Very Often Sometimes Rarely Never

Section 7: Below are a number of statements which refer to problem situations or traumas which have been important in your life. Please circle *True* if you agree, *Sometimes True* if appropriate, or *False* if you do not agree for each statement.

1	I just do things aimlessly, not considering how they might affect the situation.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
2	I feel helpless, unable to think about any solution to my problem.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
3	I think only of myself when faced with problems.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
4	My life just falls to pieces at problem times, and I feel hopeless.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
5	I blame myself for my problems.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
6	I tend to think I bring problems on myself.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
7	I am disappointed with my ability to cope.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
8	I can generally take control of problem situations.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
9	I consider several alternatives for handling my problem .	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
10	I make a plan of action and follow it.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
11	I am inspired to do something creative when faced with a problem.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
12	I think up as many ways as possible to handle the situation.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
13	I can generally see a way out of problem situations and know what to do.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
14	I make decisions and am happy with them later.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>

15	When faced with a new situation I have confidence that I handle any problems that might arise.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
16	My way of dealing with the situation usually turns out exactly as I planned.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
17	I feel that time is a great healer and just wait.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
18	I think 'everything will be O'K', and don't worry.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
19	I just wish that things might go away.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
20	I try to ignore and forget the whole thing.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
21	I take some positive action.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
22	I see problems as a challenge to be overcome.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
23	I feel that problems are a normal part of living and face up to them.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
24	I try to see the positive side of the situation.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
25	I keep my feelings to myself.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
26	I talk to someone.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
27	I seek sympathy and understanding.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>
28	I generally feel that a problem shared is a problem halved.	<i>True</i>	<i>Sometimes True</i>	<i>False</i>

Section 8: Please answer the following questions to indicate what you generally do and feel when you experience stressful events. Please try to respond to each item separately in your mind from each other item. Choose your answers thoughtfully and make your answers as truthful as you can. There are no right or wrong answers.

1 I try to grow as a person as a result of the experience.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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2 I turn to work or other substitute activities to take my mind off things.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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3 I get upset and let my emotions out.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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4 I try to get advice from someone about what to do.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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5 I concentrate my efforts on doing something about it.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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6 I say to myself “this isn’t real”.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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7 I put my trust in God.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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8 I admit to myself that I can't deal with it, and quit trying.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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9 I restrain myself from doing anything too quickly.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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10 I discuss my feelings with someone.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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11 I get used to the idea that it happened.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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12 I talk to someone to find out more about the situation.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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13 I keep myself from getting distracted by other thoughts or activities.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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14 I daydream about things other than this.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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15 I get upset, and am really aware of it.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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16 I seek God's help.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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17 I make a plan of action.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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18 I accept that this has happened and that it can't be changed.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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19 I hold off doing anything about it until the situation permits.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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20 I try to get emotional support from friends or relatives.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
------------------------------------	--	---	---

21 I just give up trying to reach my goal.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
------------------------------------	--	---	---

22 I take additional action to try to get rid of the problem.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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23 I refuse to believe that it has happened.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
------------------------------------	--	---	---

24 I let my feelings out.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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25 I try to see it in a different light, to make it seem more positive.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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26 I talk to someone who could do something concrete about the problem.
I Usually Do This A Lot I Usually Do This A Medium Amount I Usually Do This A Little Bit I Usually Don't Do This At All

27 I sleep more than usual.
I Usually Do This A Lot I Usually Do This A Medium Amount I Usually Do This A Little Bit I Usually Don't Do This At All

28 I try to come up with a strategy about what to do.
I Usually Do This A Lot I Usually Do This A Medium Amount I Usually Do This A Little Bit I Usually Don't Do This At All

29 I focus on dealing with this problem, and if necessary let other things slide a little.
I Usually Do This A Lot I Usually Do This A Medium Amount I Usually Do This A Little Bit I Usually Don't Do This At All

30 I get sympathy and understanding from someone.
I Usually Do This A Lot I Usually Do This A Medium Amount I Usually Do This A Little Bit I Usually Don't Do This At All

31 I give up the attempt to get what I want.
I Usually Do This A Lot I Usually Do This A Medium Amount I Usually Do This A Little Bit I Usually Don't Do This At All

32 I look for something good in what is happening.
I Usually Do This A Lot I Usually Do This A Medium Amount I Usually Do This A Little Bit I Usually Don't Do This At All

33 I think about how I might best handle the problem.
I Usually Do This A Lot I Usually Do This A Medium Amount I Usually Do This A Little Bit I Usually Don't Do This At All

34 I pretend that it hasn't really happened.
I Usually Do This A Lot I Usually Do This A Medium Amount I Usually Do This A Little Bit I Usually Don't Do This At All

35 I make sure not to make matters worse by acting too soon.

*I Usually Do This A
Lot*

*I Usually Do This A
Medium Amount*

*I Usually Do This A
Little Bit*

*I Usually Don't Do
This At All*

36 I try hard to prevent other things from interfering with my efforts at dealing with this.

*I Usually Do This A
Lot*

*I Usually Do This A
Medium Amount*

*I Usually Do This A
Little Bit*

*I Usually Don't Do
This At All*

37 I go to movies or watch TV, to think about it less.

*I Usually Do This A
Lot*

*I Usually Do This A
Medium Amount*

*I Usually Do This A
Little Bit*

*I Usually Don't Do
This At All*

38 I accept the reality of the fact that it happened.

*I Usually Do This A
Lot*

*I Usually Do This A
Medium Amount*

*I Usually Do This A
Little Bit*

*I Usually Don't Do
This At All*

39 I ask people who have had similar experiences what they did.

*I Usually Do This A
Lot*

*I Usually Do This A
Medium Amount*

*I Usually Do This A
Little Bit*

*I Usually Don't Do
This At All*

40 I feel a lot of emotional distress and I find myself expressing those feelings a lot.

*I Usually Do This A
Lot*

*I Usually Do This A
Medium Amount*

*I Usually Do This A
Little Bit*

*I Usually Don't Do
This At All*

41 I take direct action to get around the problem.

*I Usually Do This A
Lot*

*I Usually Do This A
Medium Amount*

*I Usually Do This A
Little Bit*

*I Usually Don't Do
This At All*

42 I try to find comfort in my religion.

*I Usually Do This A
Lot*

*I Usually Do This A
Medium Amount*

*I Usually Do This A
Little Bit*

*I Usually Don't Do
This At All*

43 I force myself to wait for the right time to do something.

*I Usually Do This A
Lot*

*I Usually Do This A
Medium Amount*

*I Usually Do This A
Little Bit*

*I Usually Don't Do
This At All*

44 I reduce the amount of effort I'm putting into solving the problem.

*I Usually Do This A
Lot*

*I Usually Do This A
Medium Amount*

*I Usually Do This A
Little Bit*

*I Usually Don't Do
This At All*

45 I talk to someone about how I feel.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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46 I learn to live with it.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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47 I put aside other activities in order to concentrate on this.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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48 I think hard about what steps to take.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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49 I act as though it hasn't even happened.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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50 I do what has to be done, one step at a time.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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51 I learn something from the experience.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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52 I pray more than usual.

<i>I Usually Do This A Lot</i>	<i>I Usually Do This A Medium Amount</i>	<i>I Usually Do This A Little Bit</i>	<i>I Usually Don't Do This At All</i>
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Section 9: Thinking back over the past week, including today, try to estimate how much distress has been caused for you by each of the list of problems below. Then indicate the appropriate number for each statement. The numbers range from 0=Not at all distressed to 4=Extremely distressed.

		<i>Not At All Distressed</i>			<i>Extremely Distressed</i>	
		0	1	2	3	4
1	Nervousness or shakiness inside.					
2	Faintness or dizziness.	0	1	2	3	4
3	The idea that someone else can control your thoughts.	0	1	2	3	4
4	Feeling others are to blame for most of your troubles.	0	1	2	3	4
5	Trouble remembering things.	0	1	2	3	4
6	Feeling easily annoyed or irritated.	0	1	2	3	4
7	Pains in heart or chest.	0	1	2	3	4
8	Feeling afraid of open spaces.	0	1	2	3	4
9	Thoughts of ending your life.	0	1	2	3	4
10	Feeling that most people cannot be trusted.	0	1	2	3	4
11	Poor appetite.	0	1	2	3	4
12	Suddenly scared for no reason.	0	1	2	3	4
13	Temper outbursts that you could not control.	0	1	2	3	4

14	Feeling lonely even when you are with people.	0	1	2	3	4
15	Feeling blocked in getting things done.	0	1	2	3	4
16	Feeling lonely.	0	1	2	3	4
17	Feeling blue.	0	1	2	3	4
18	Feeling no interest in things.	0	1	2	3	4
19	Feeling fearful.	0	1	2	3	4
20	Your feelings being easily hurt.	0	1	2	3	4
21	Feeling that people are unfriendly or dislike you.	0	1	2	3	4
22	Feeling inferior to others.	0	1	2	3	4
23	Nausea or upset stomach.	0	1	2	3	4
24	Feeling that you are watched or talked about by others.	0	1	2	3	4
25	Trouble falling asleep.	0	1	2	3	4
26	Having to check and double check what you do.	0	1	2	3	4
27	Difficulty making decisions.	0	1	2	3	4
28	Feeling afraid to travel on buses or trains.	0	1	2	3	4
29	Trouble getting your breath.	0	1	2	3	4

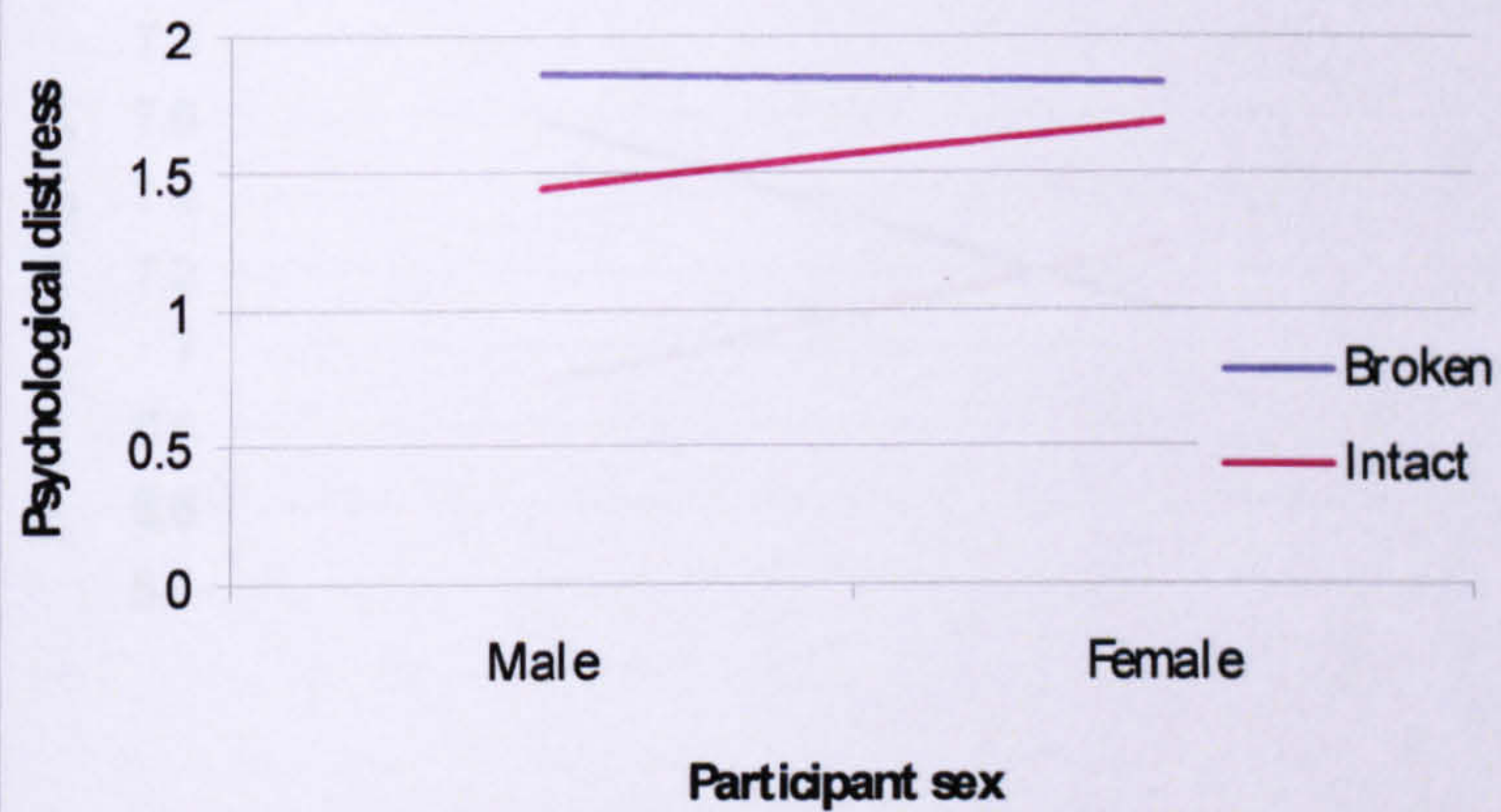
30	Hot or cold spells.	0	1	2	3	4
31	Having to avoid certain things, places, or activities because they frighten you.	0	1	2	3	4
32	Your mind going blank.	0	1	2	3	4
33	Numbness or tingling in parts of your body.	0	1	2	3	4
34	The idea that you should be punished for your sins.	0	1	2	3	4
35	Feeling hopeless about the future.	0	1	2	3	4
36	Trouble concentrating.	0	1	2	3	4
37	Feeling weak in parts of your body.	0	1	2	3	4
38	Feeling tense or keyed up.	0	1	2	3	4
39	Thoughts of death or dying.	0	1	2	3	4
40	Having urges to beat, injure, or harm someone.	0	1	2	3	4
41	Having urges to break or smash things.	0	1	2	3	4
42	Feeling very self-conscious with others.	0	1	2	3	4
43	Feeling uneasy in crowds.	0	1	2	3	4
44	Never feeling close to another person.	0	1	2	3	4

45	Spells of terror or panic.	0	1	2	3	4
46	Getting into frequent arguments.	0	1	2	3	4
47	Feeling nervous when you are left alone.	0	1	2	3	4
48	Others not giving you proper credit for your achievements.	0	1	2	3	4
49	Feeling so restless you couldn't sit still.	0	1	2	3	4
50	Feelings of worthlessness.	0	1	2	3	4
51	Feeling that people will take advantage of you if you let them.	0	1	2	3	4
52	Feelings of guilt.	0	1	2	3	4
53	The idea that something is wrong with your mind.	0	1	2	3	4

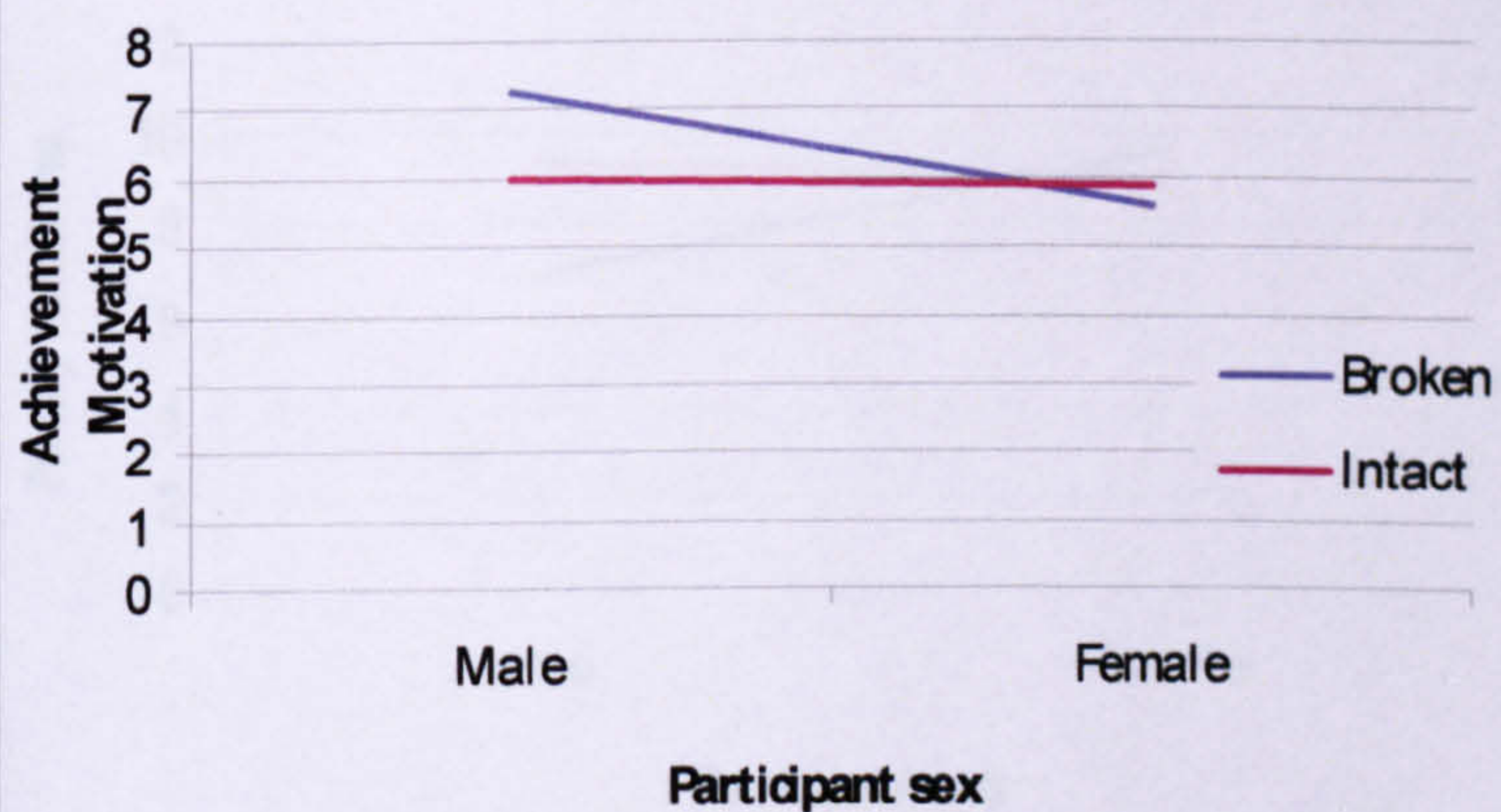
Appendix D

Illustrations of effects in Study 2

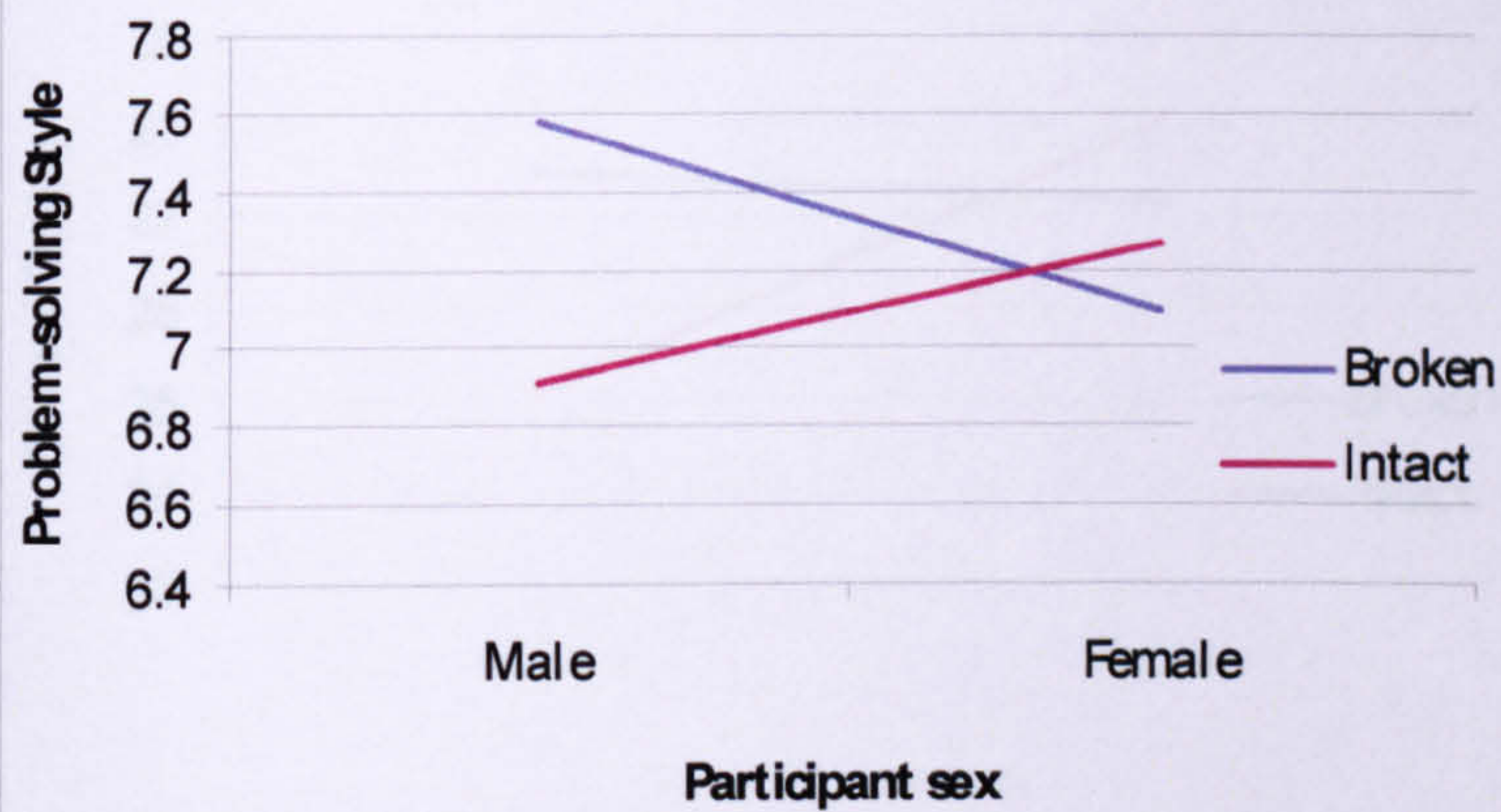
Interaction between sex and intact/ non-intact home on psychological distress



Interaction between sex and intact/ non-intact home on achievement motivation



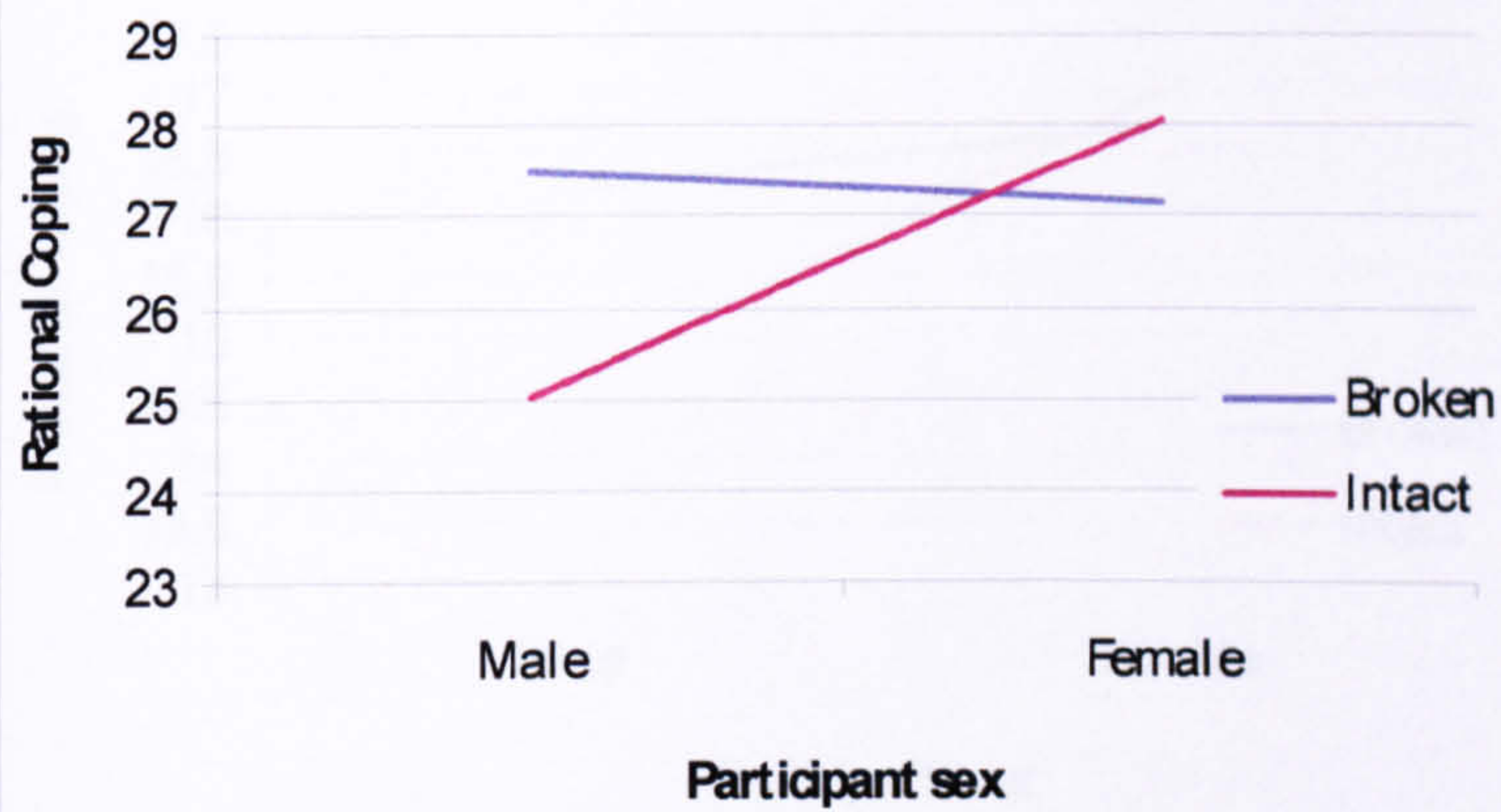
Interaction between sex and intact/ non-intact home on problem-solving style



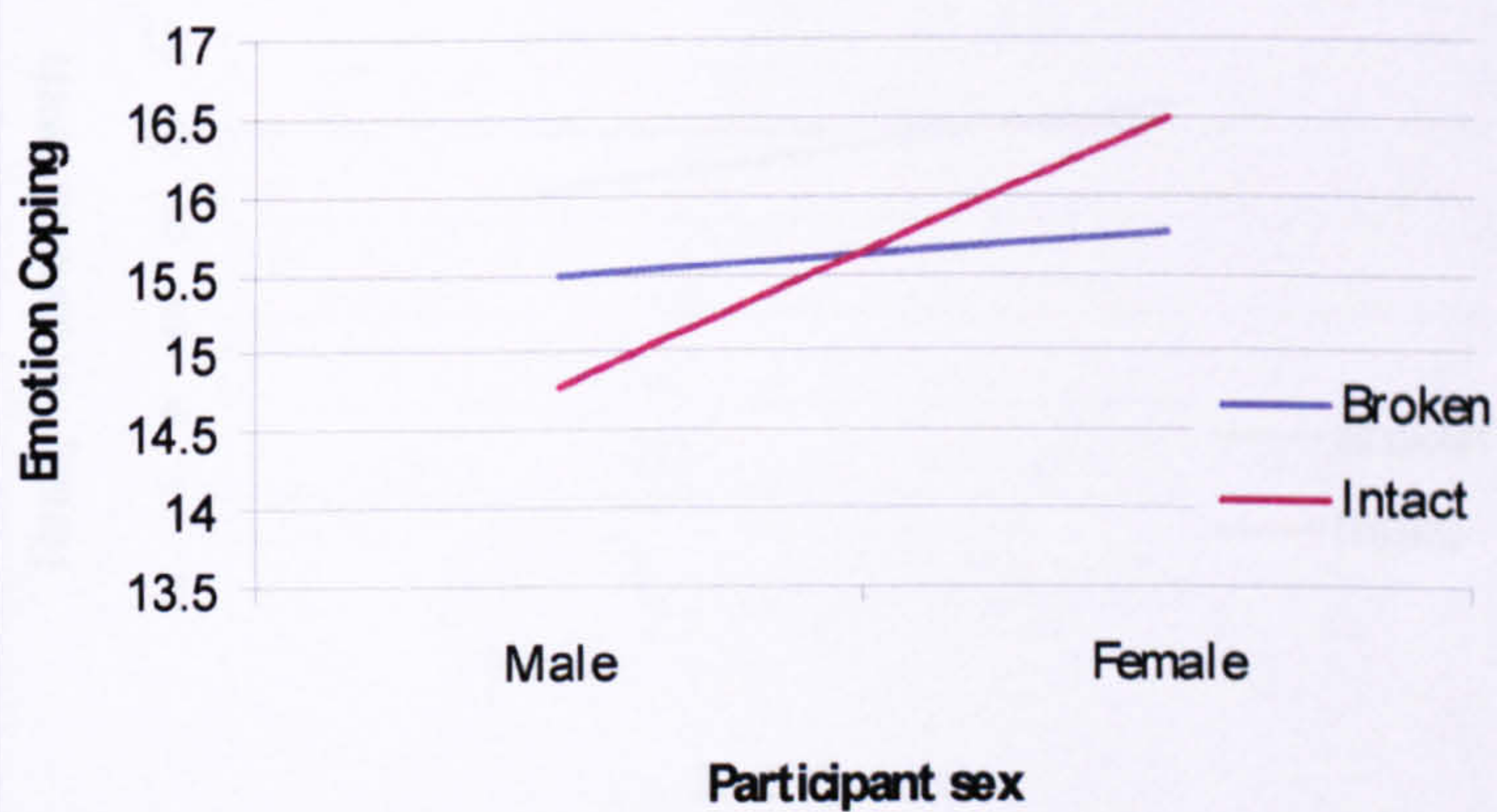
Interaction between sex and intact/ non-intact home on family relations



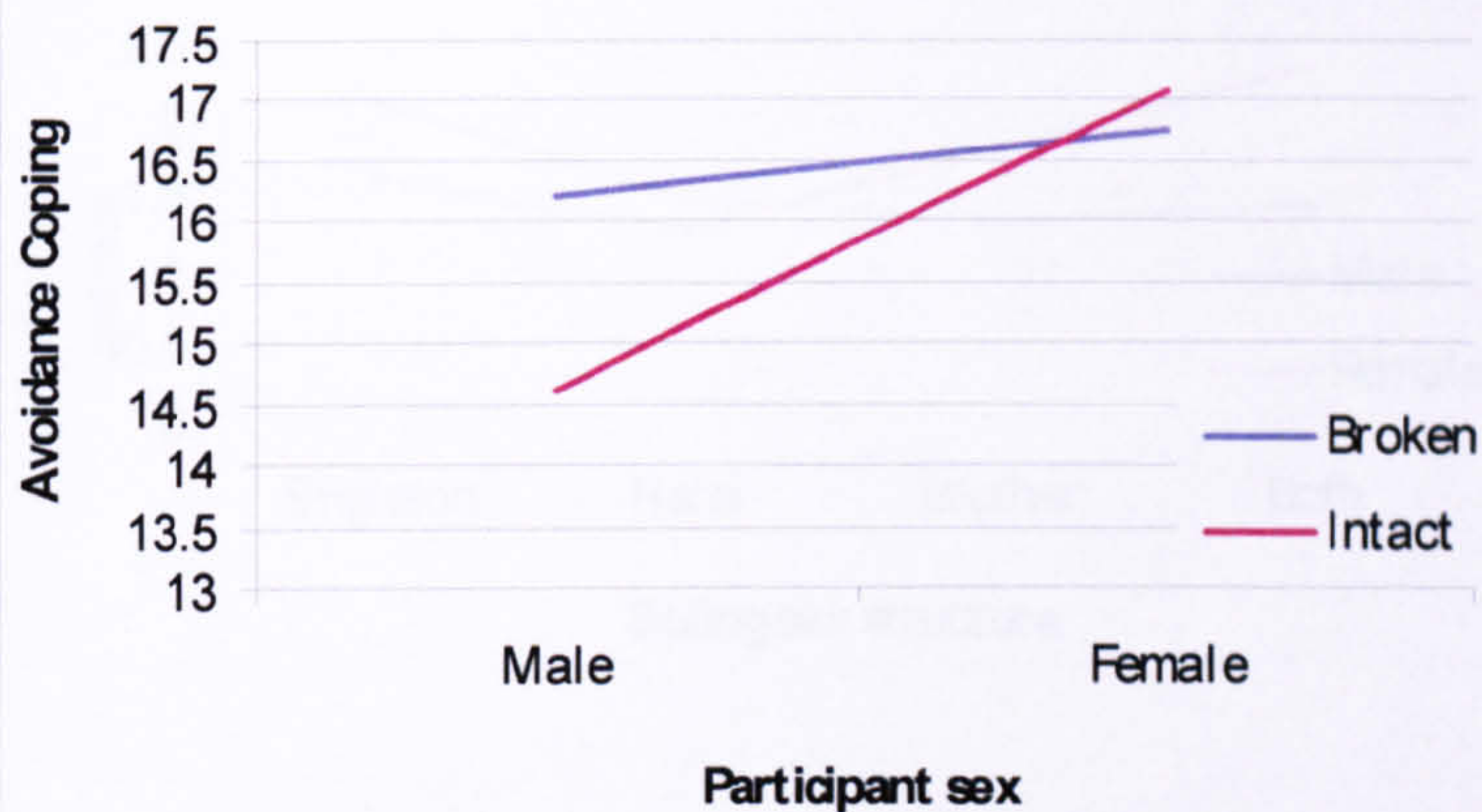
Interaction between sex and intact/ non-intact home on rational coping



Interaction between sex and intact/ non-intact home on emotion coping



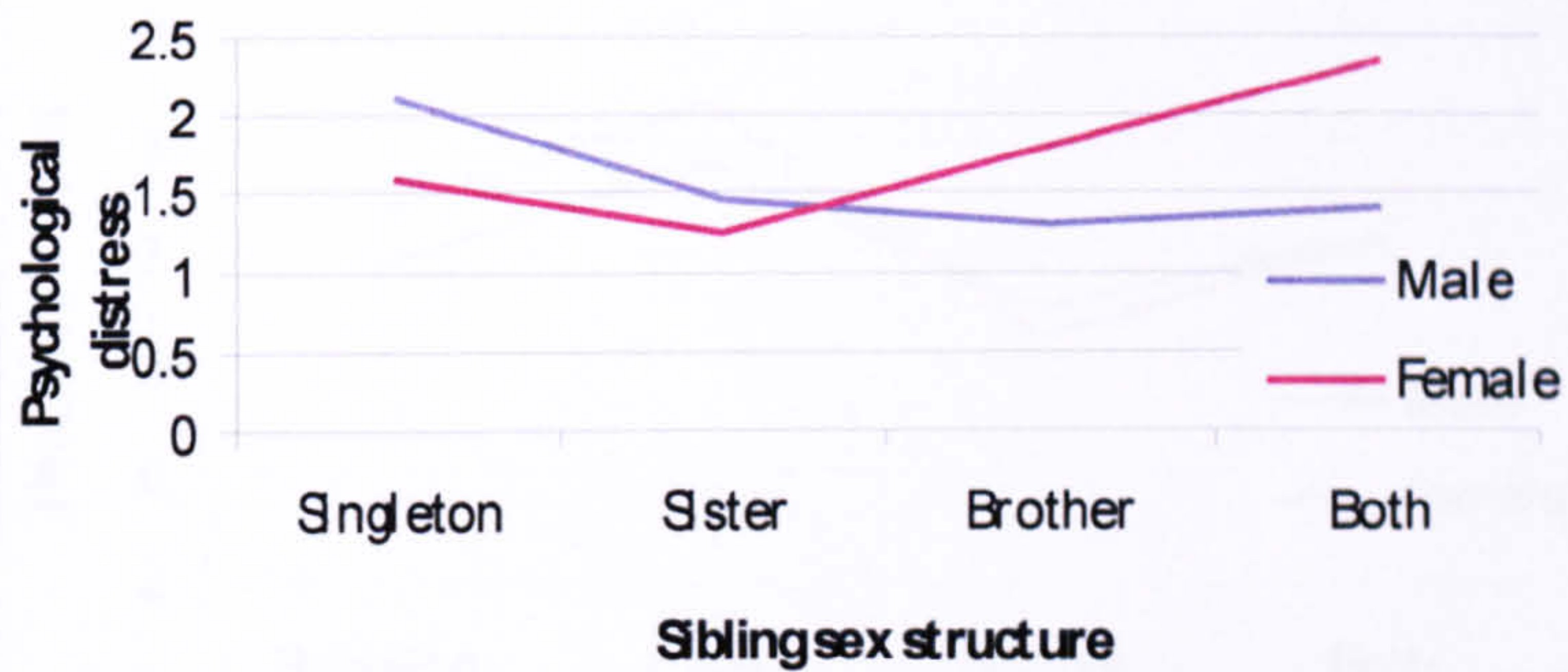
Interaction between sex and intact/ non-intact home on avoidance coping



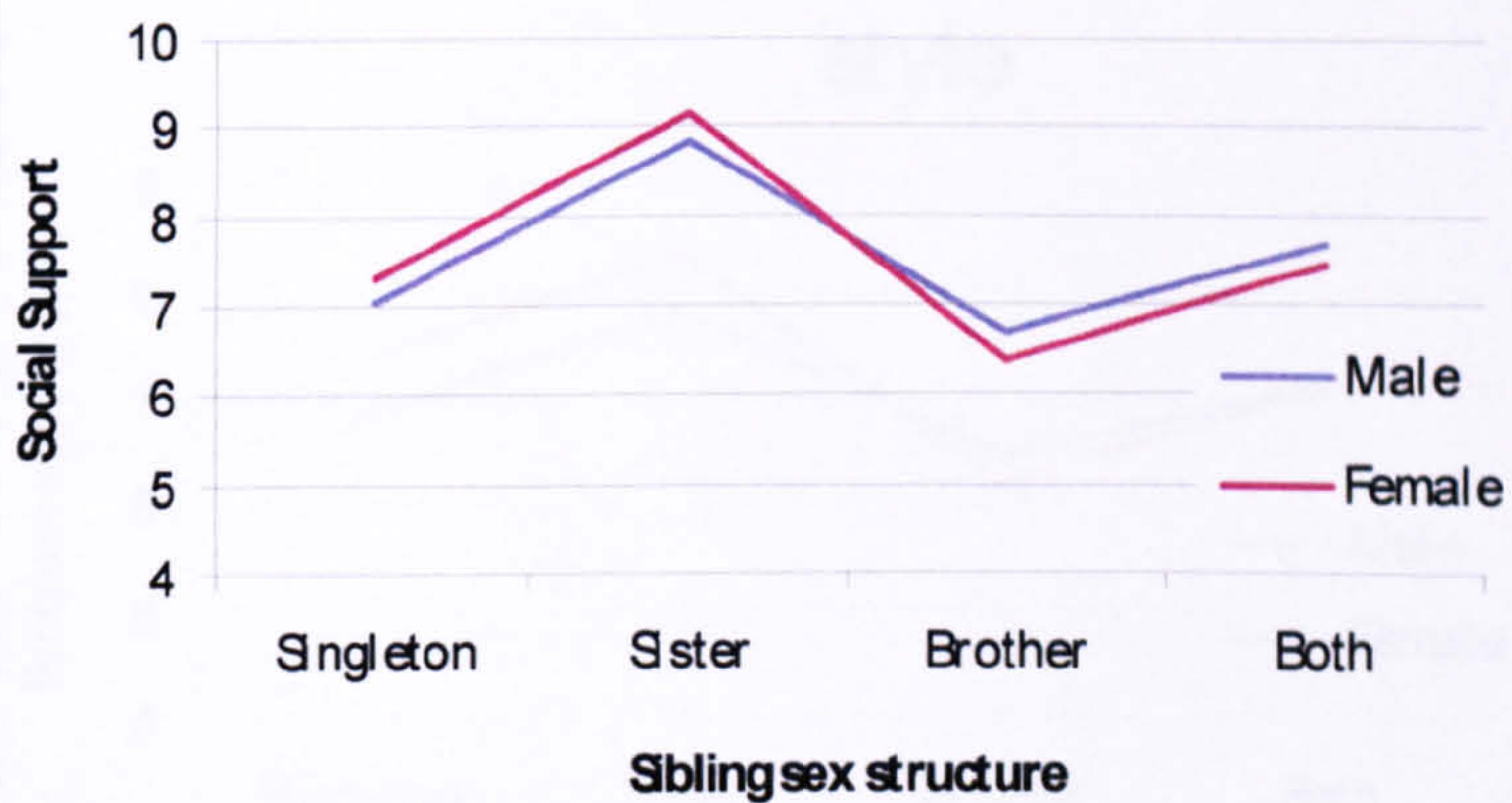
Interaction between sex and intact/ non-intact home on family personal growth



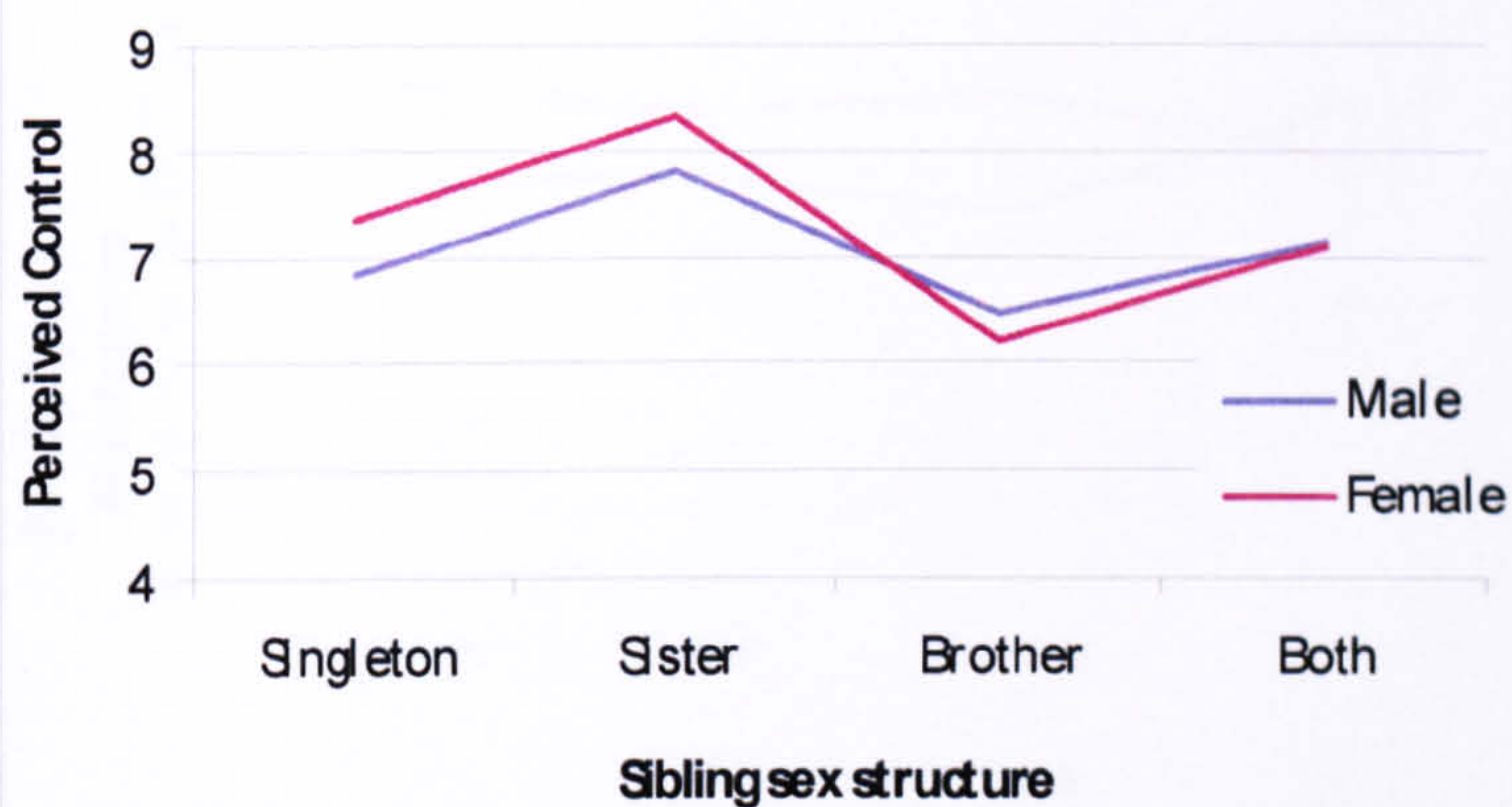
Interaction between sex and sibling sex structure on psychological distress



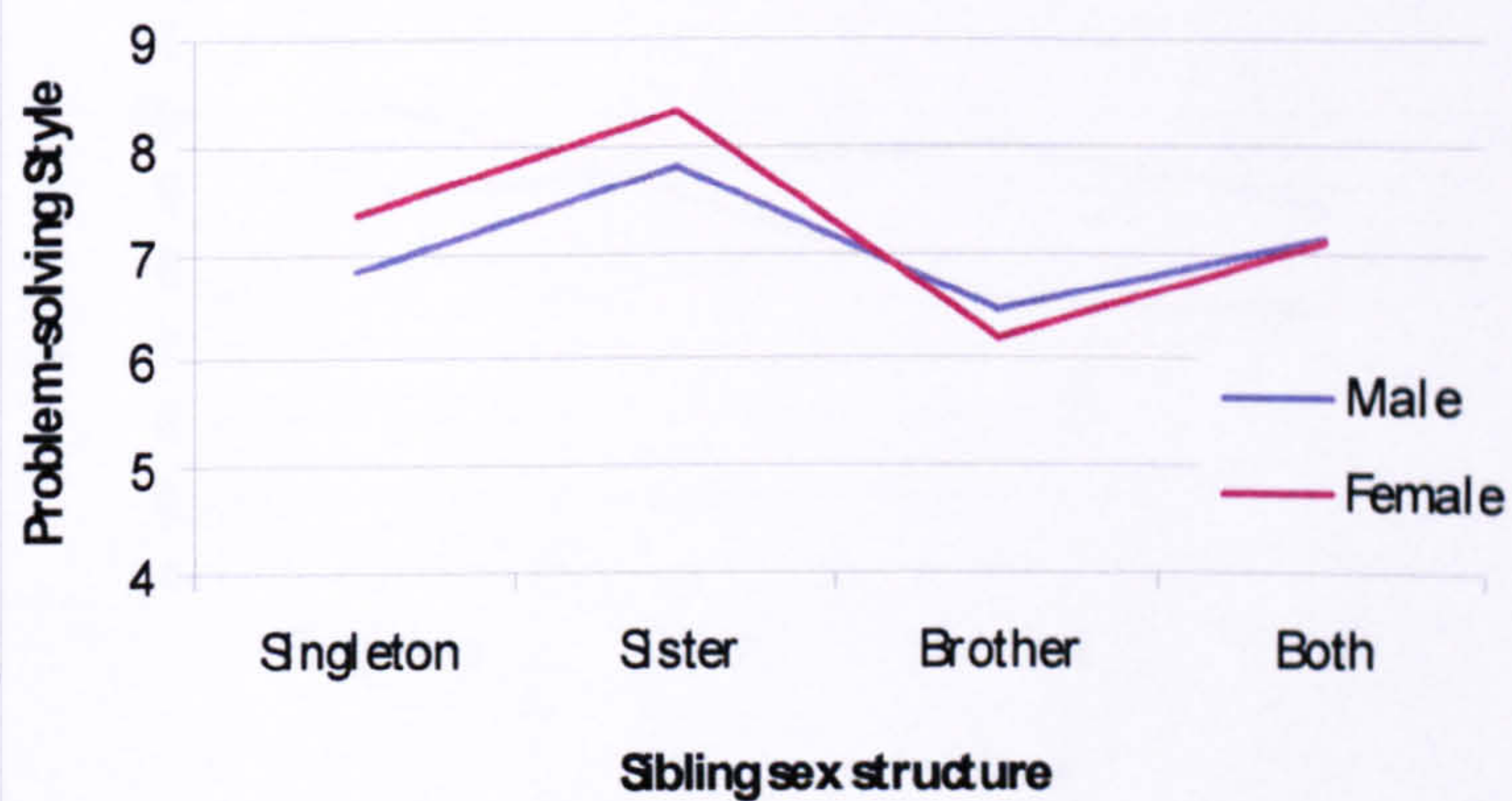
Interaction between sex and sibling sex structure on social support



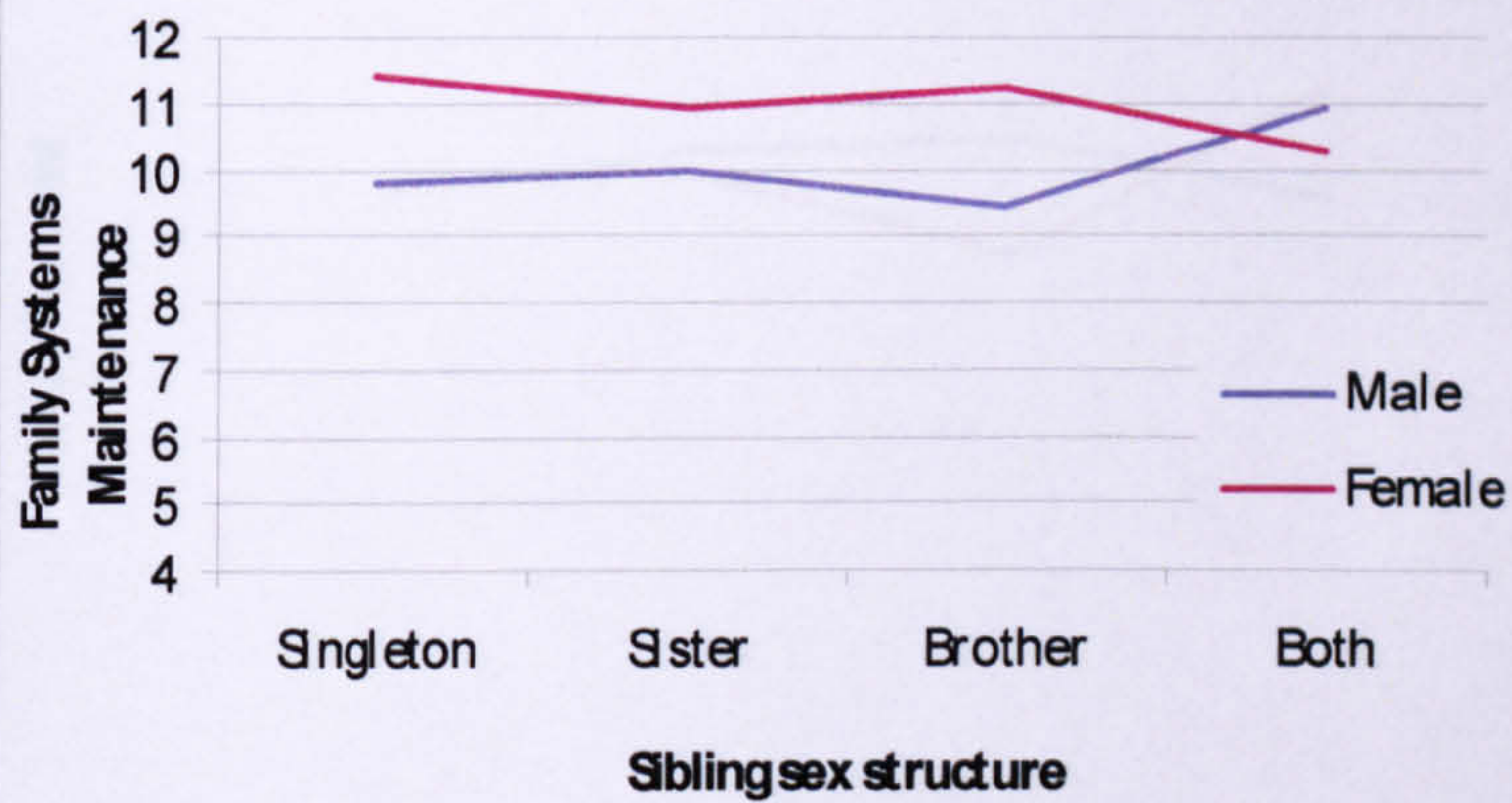
Interaction between sex and sibling sex structure on perceived control



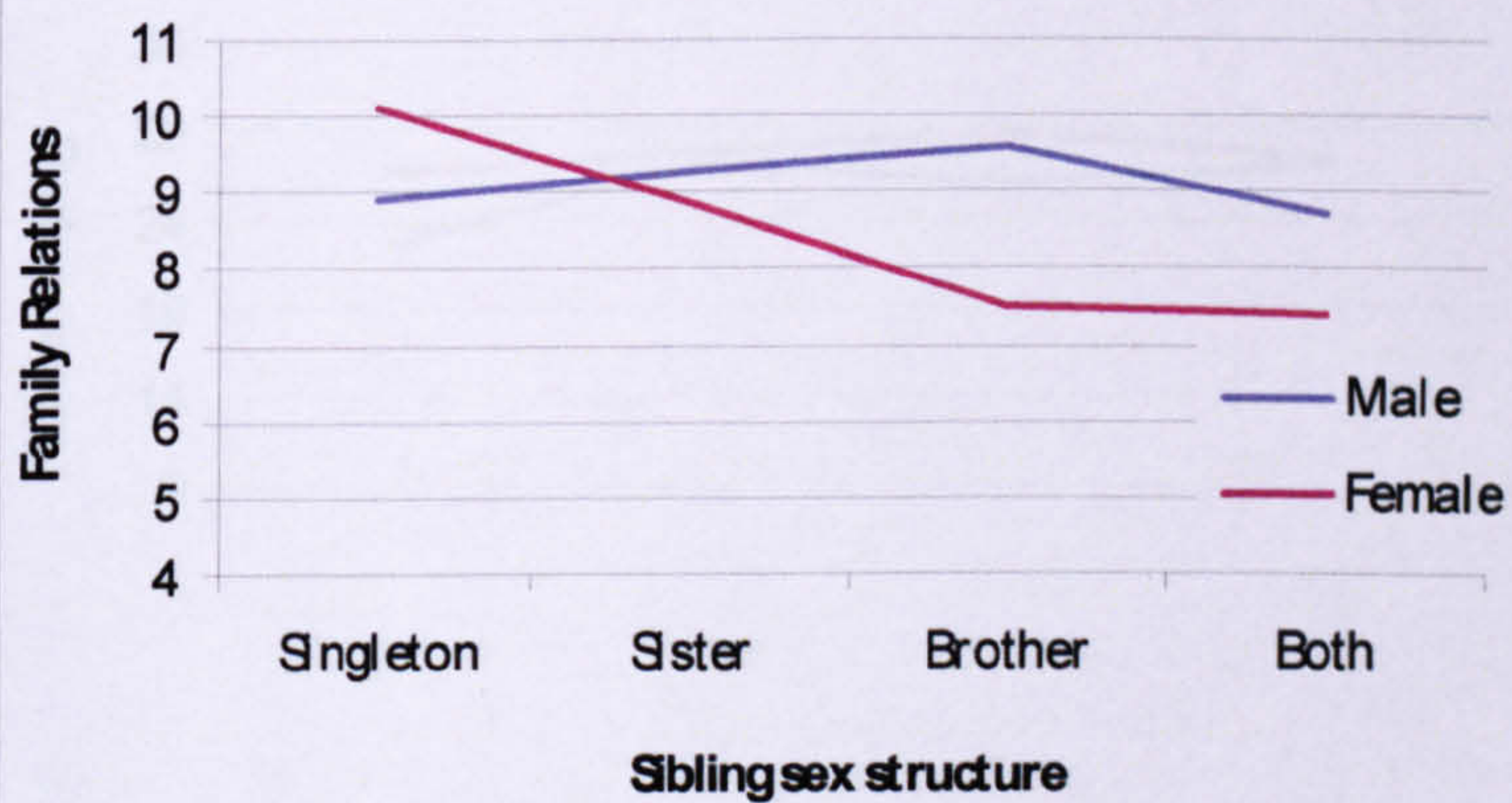
Interaction between sex and sibling sex structure on problem-solving style



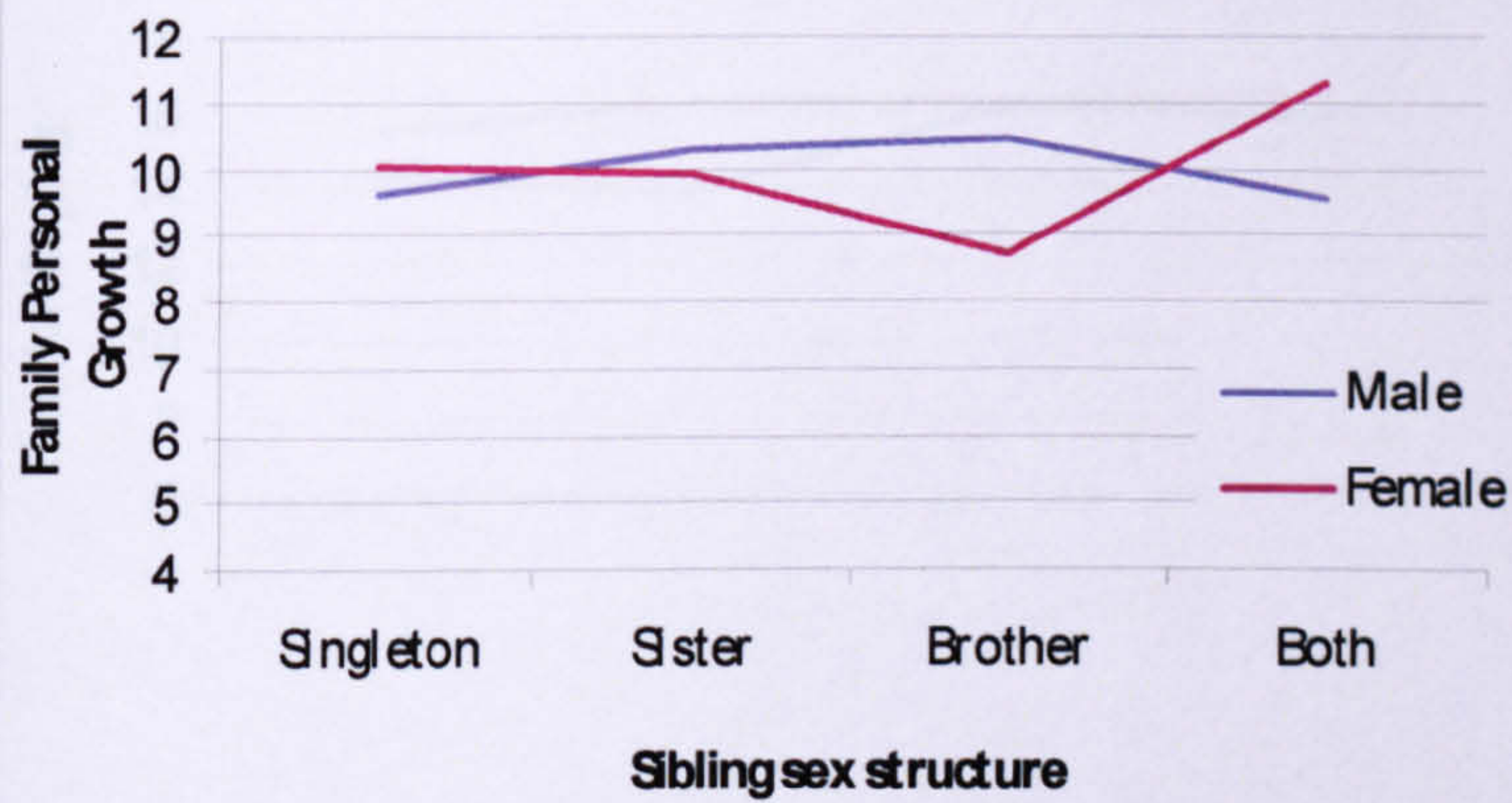
Interaction between sex and sibling sex structure on family systems maintenance



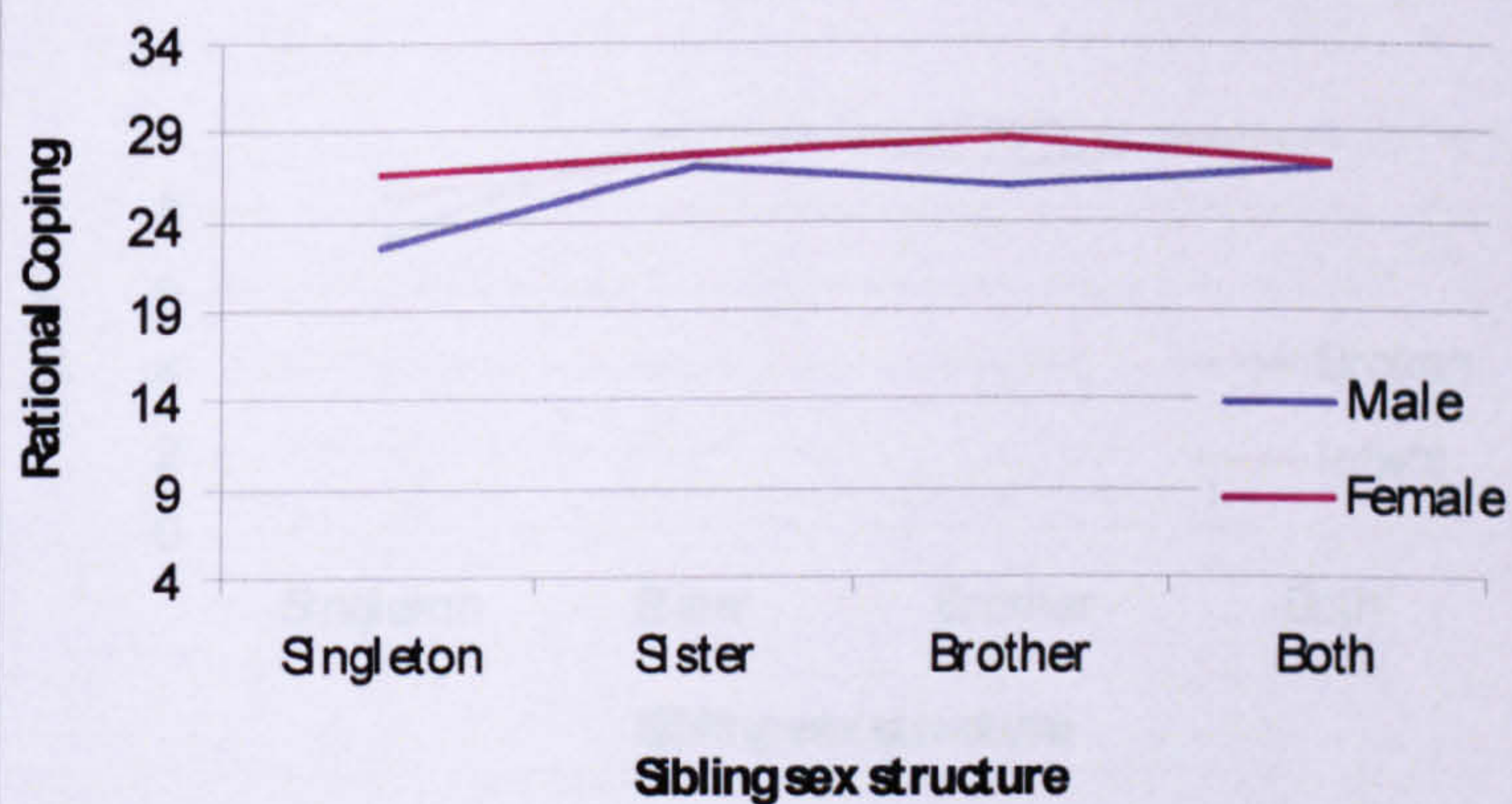
Interaction between sex and sibling sex structure on family relations



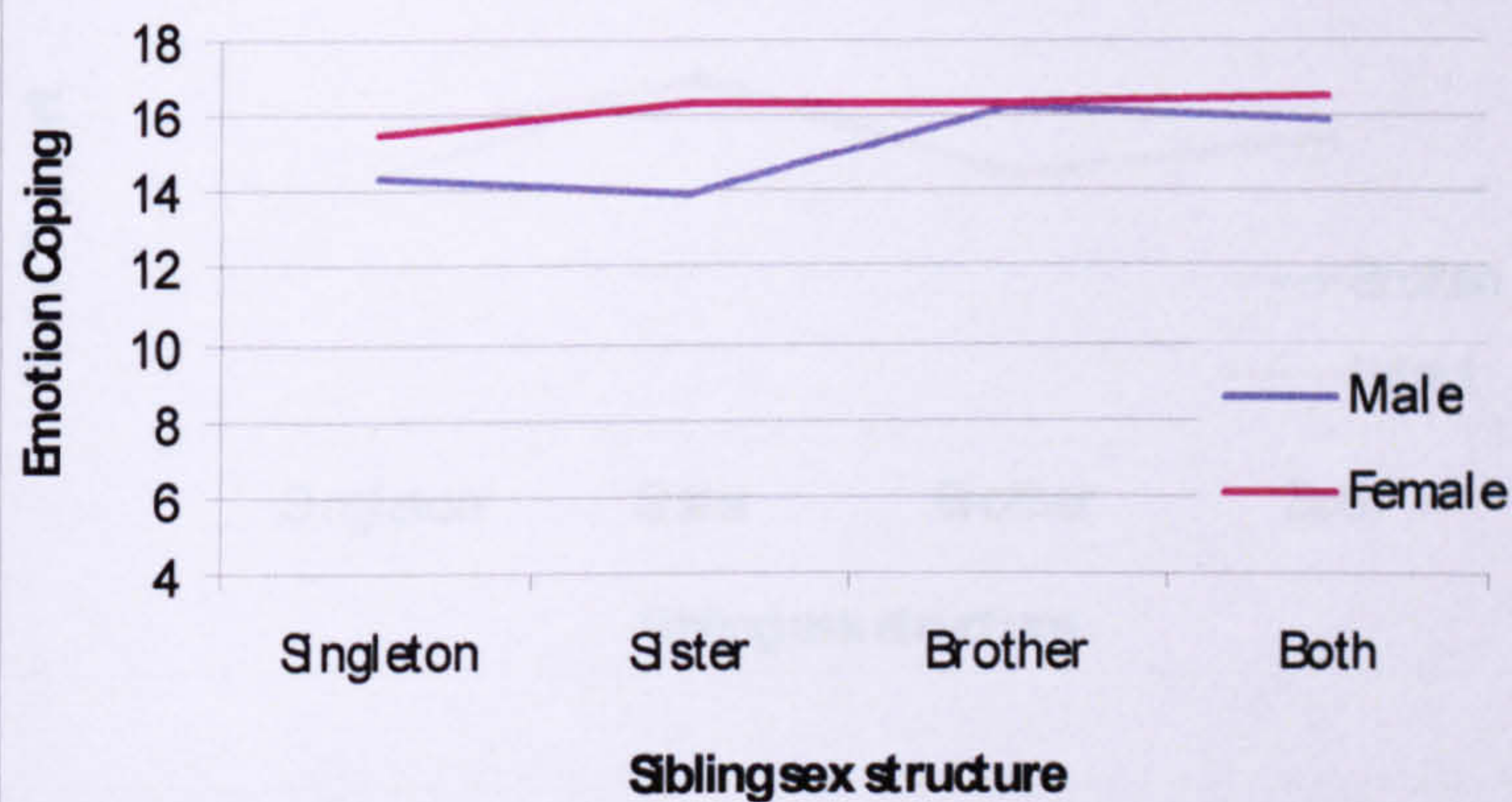
Interaction between sex and sibling sex structure on family personal growth



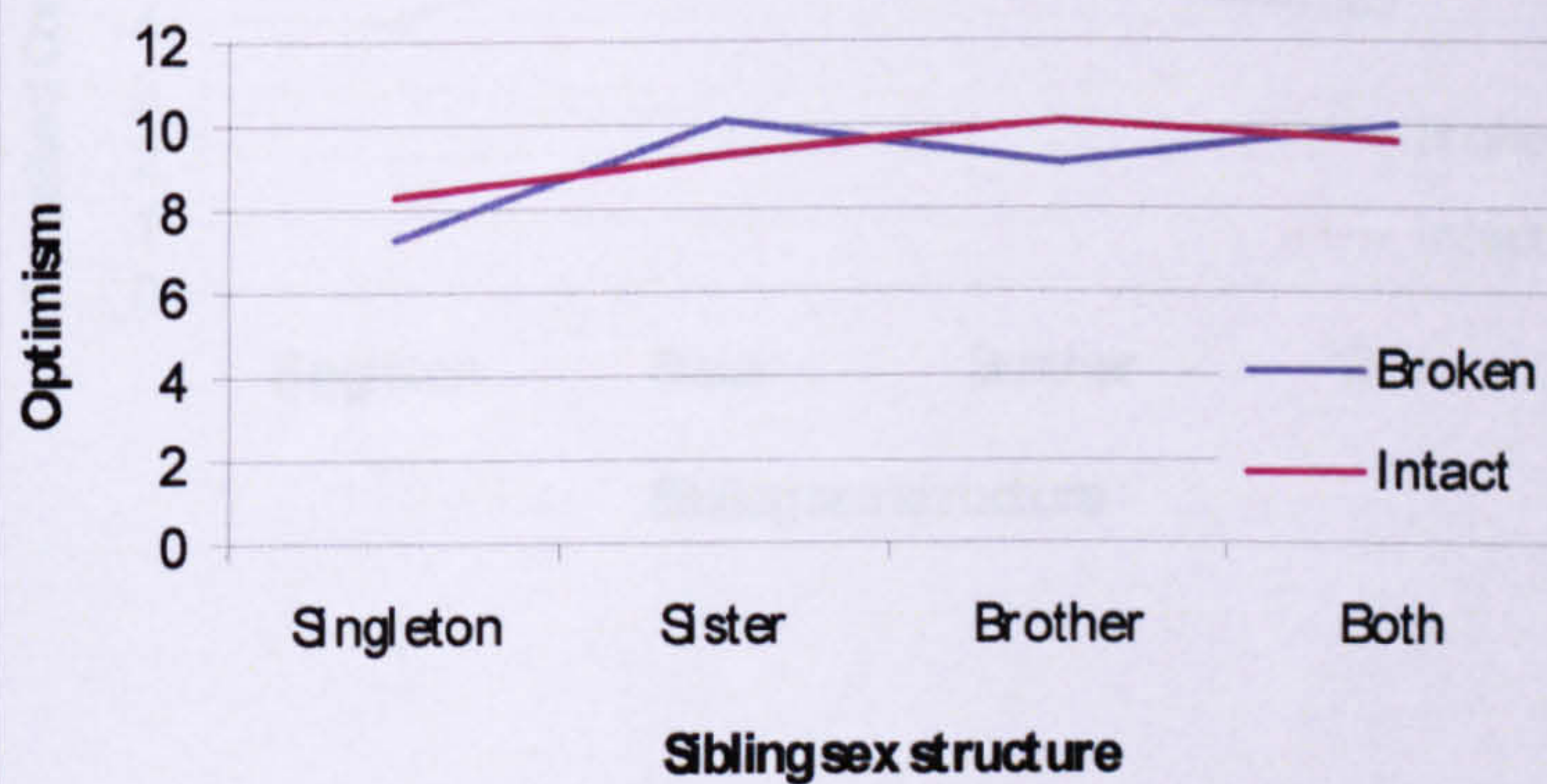
Interaction between sex and sibling sex structure on rational coping



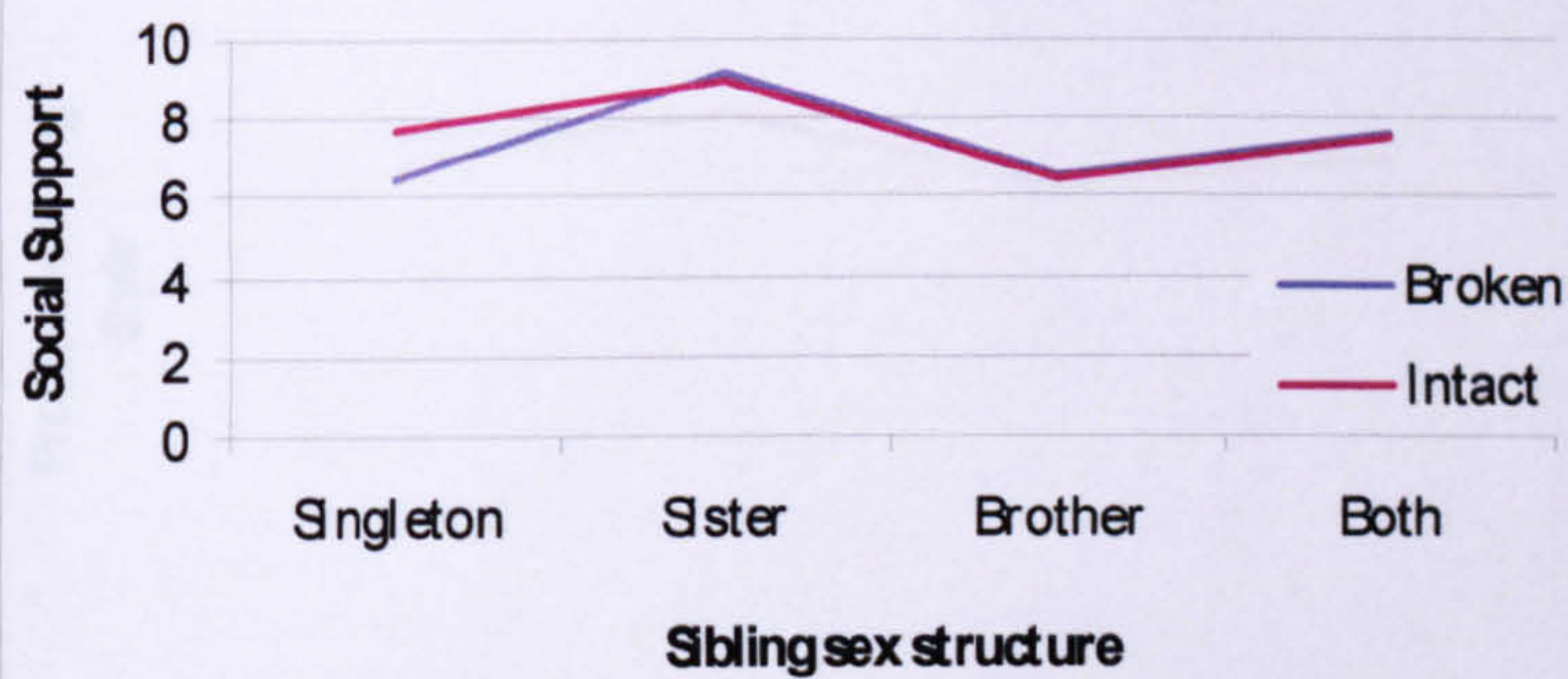
Interaction between sex and sibling sex structure on emotion coping



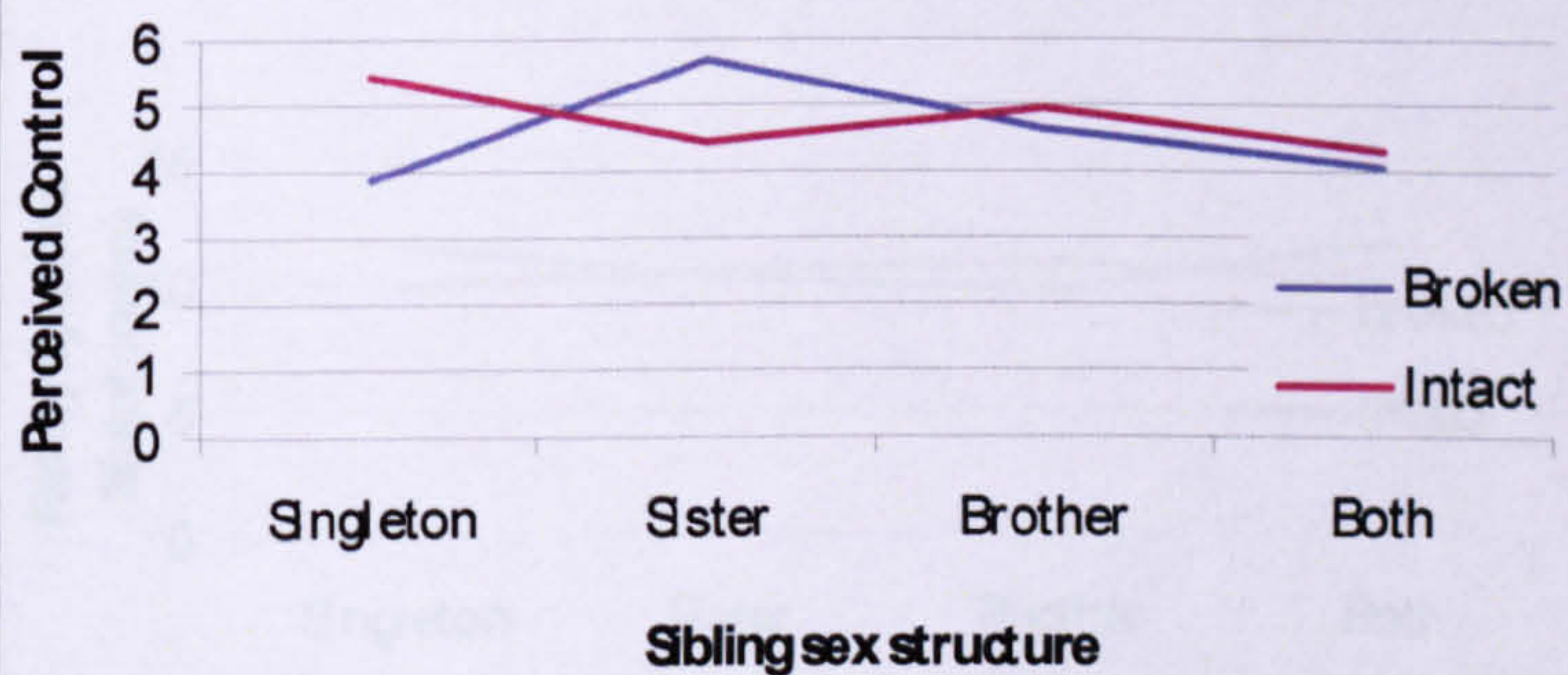
Interaction between intact/ non-intact home and sibling sex structure on optimism



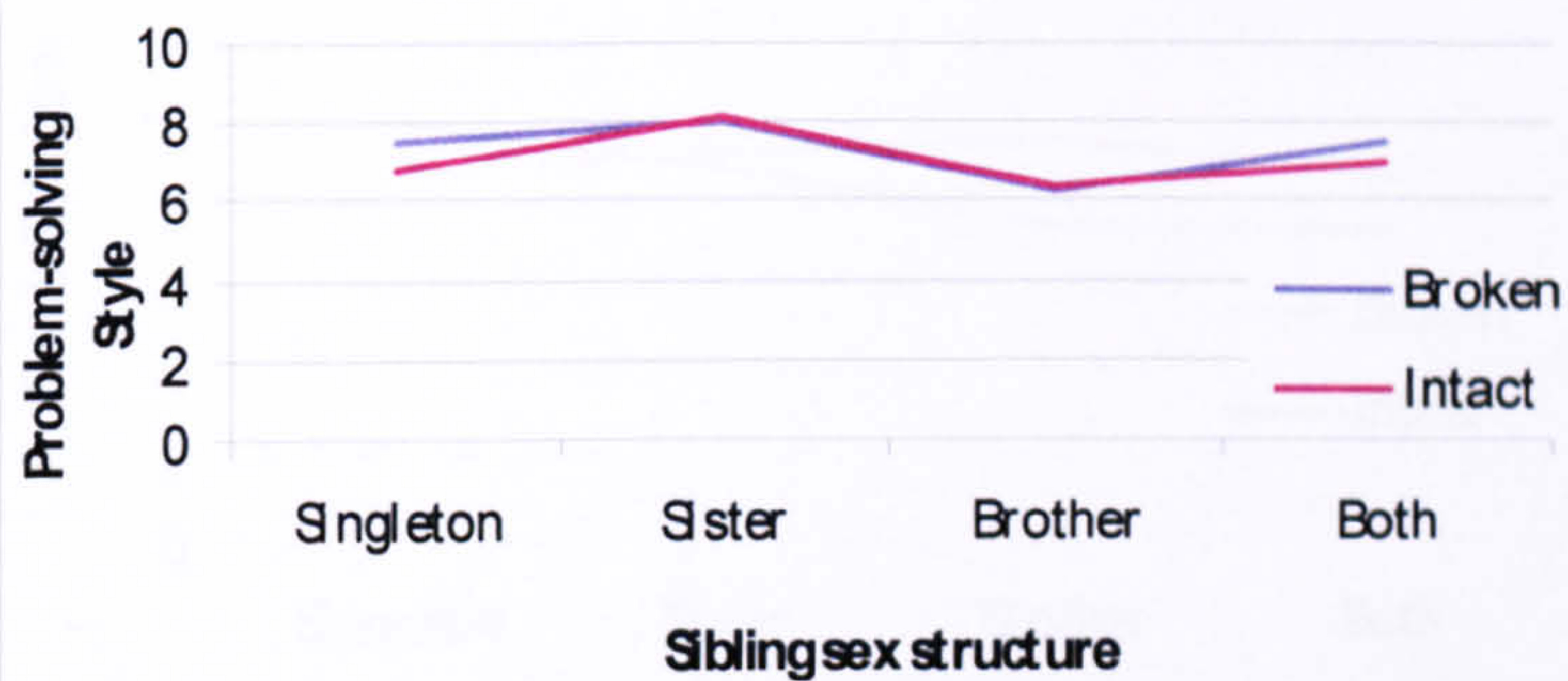
Interaction between intact/ non-intact home and sibling sex structure on social support



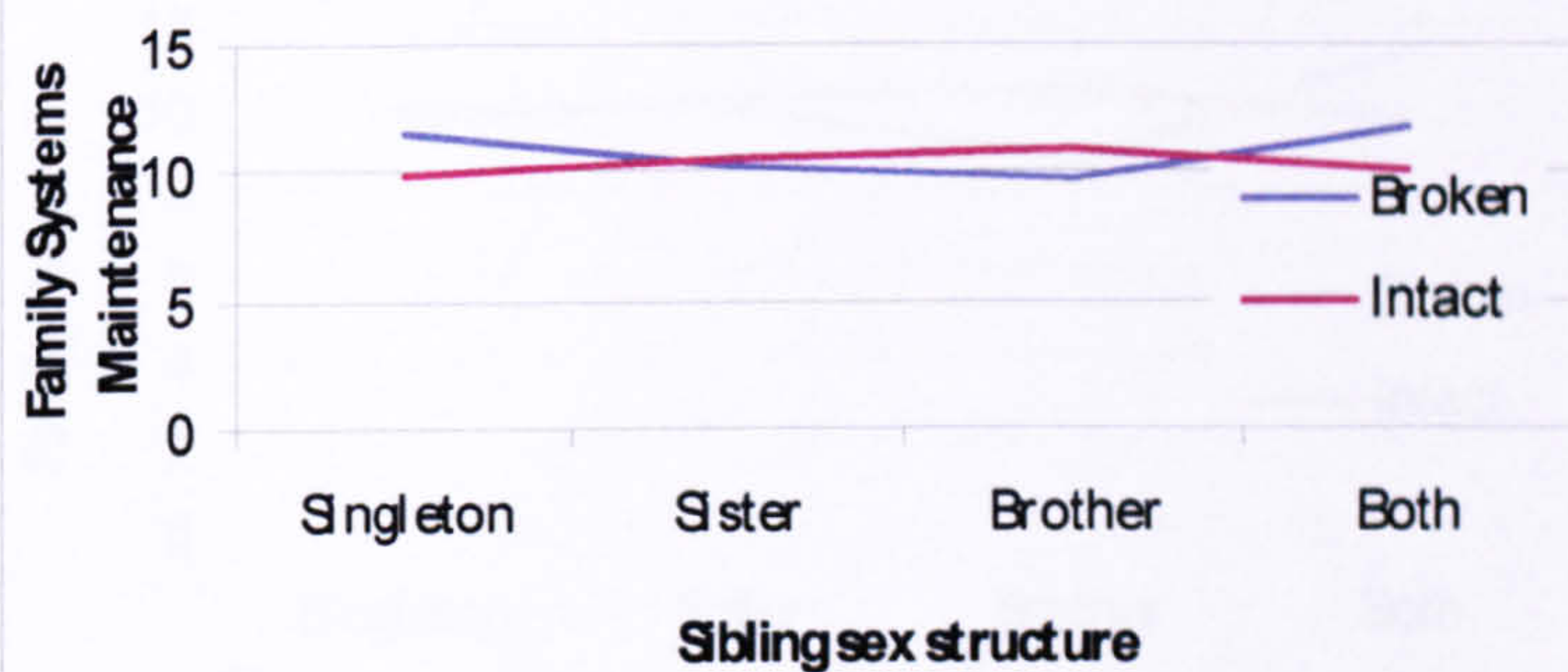
Interaction between intact/ non-intact home and sibling sex structure on perceived control



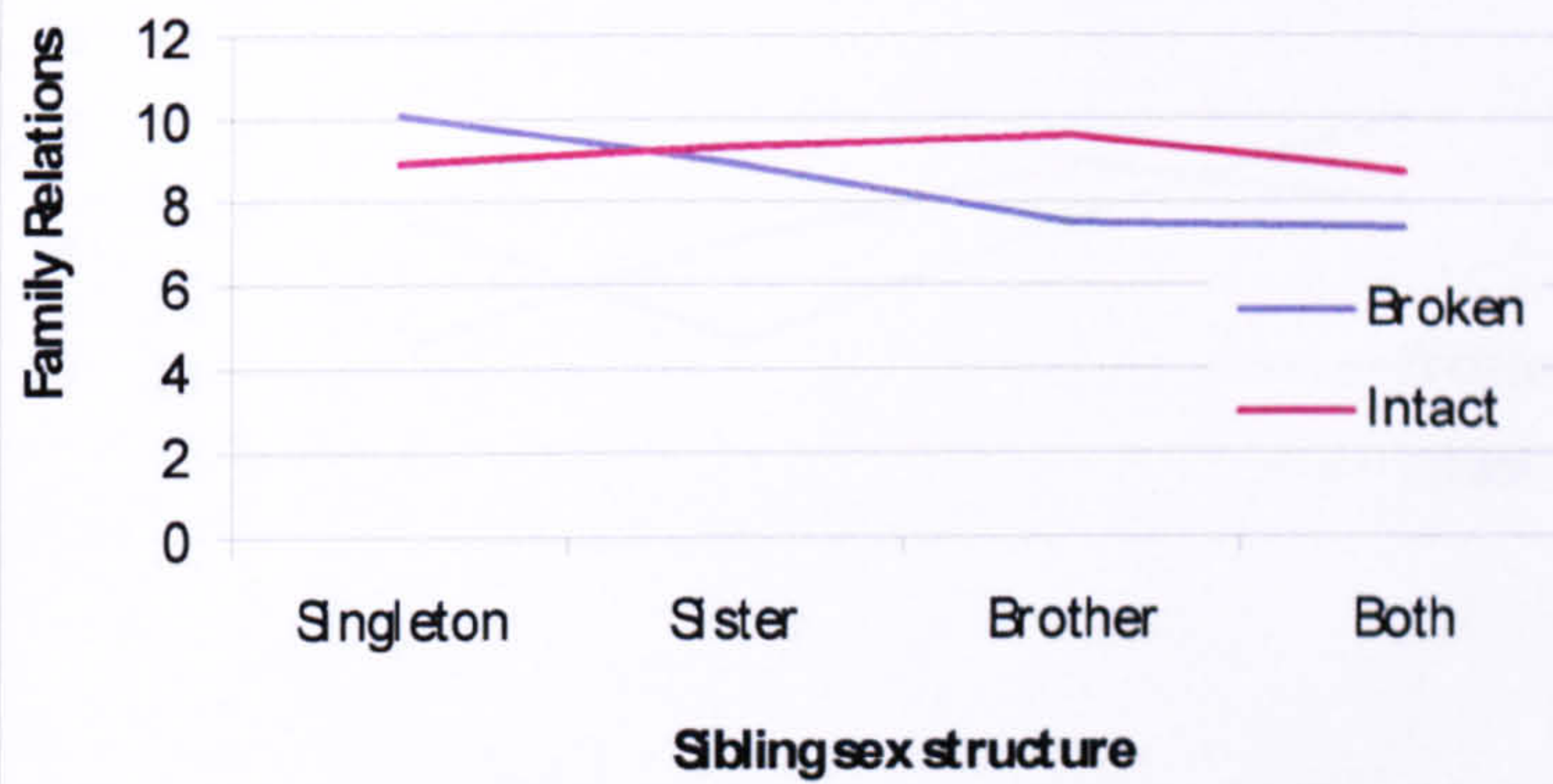
Interaction between intact/ non-intact home and sibling sex structure on problem-solving style



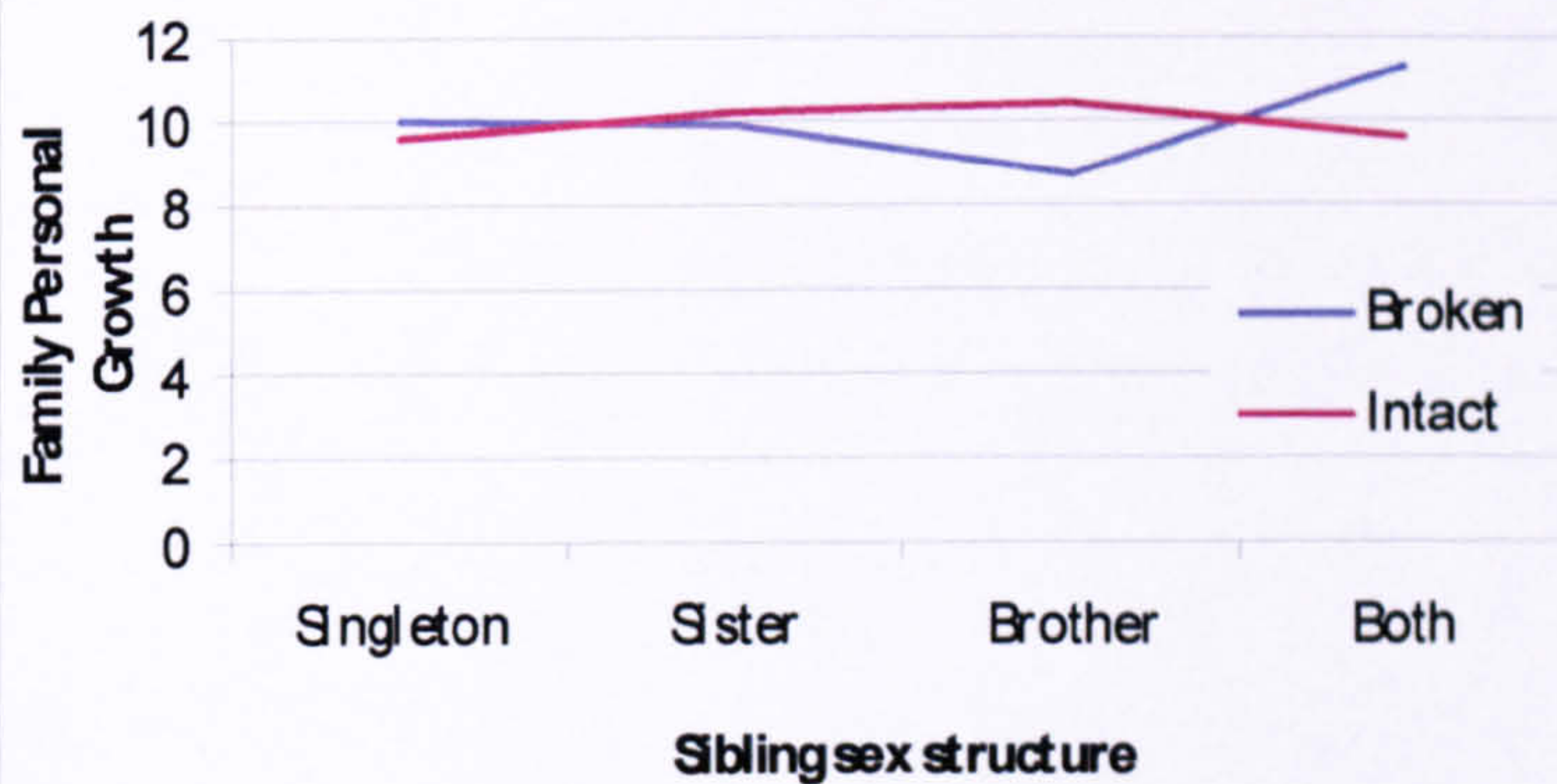
Interaction between intact/ non-intact home and sibling sex structure on family systems maintenance



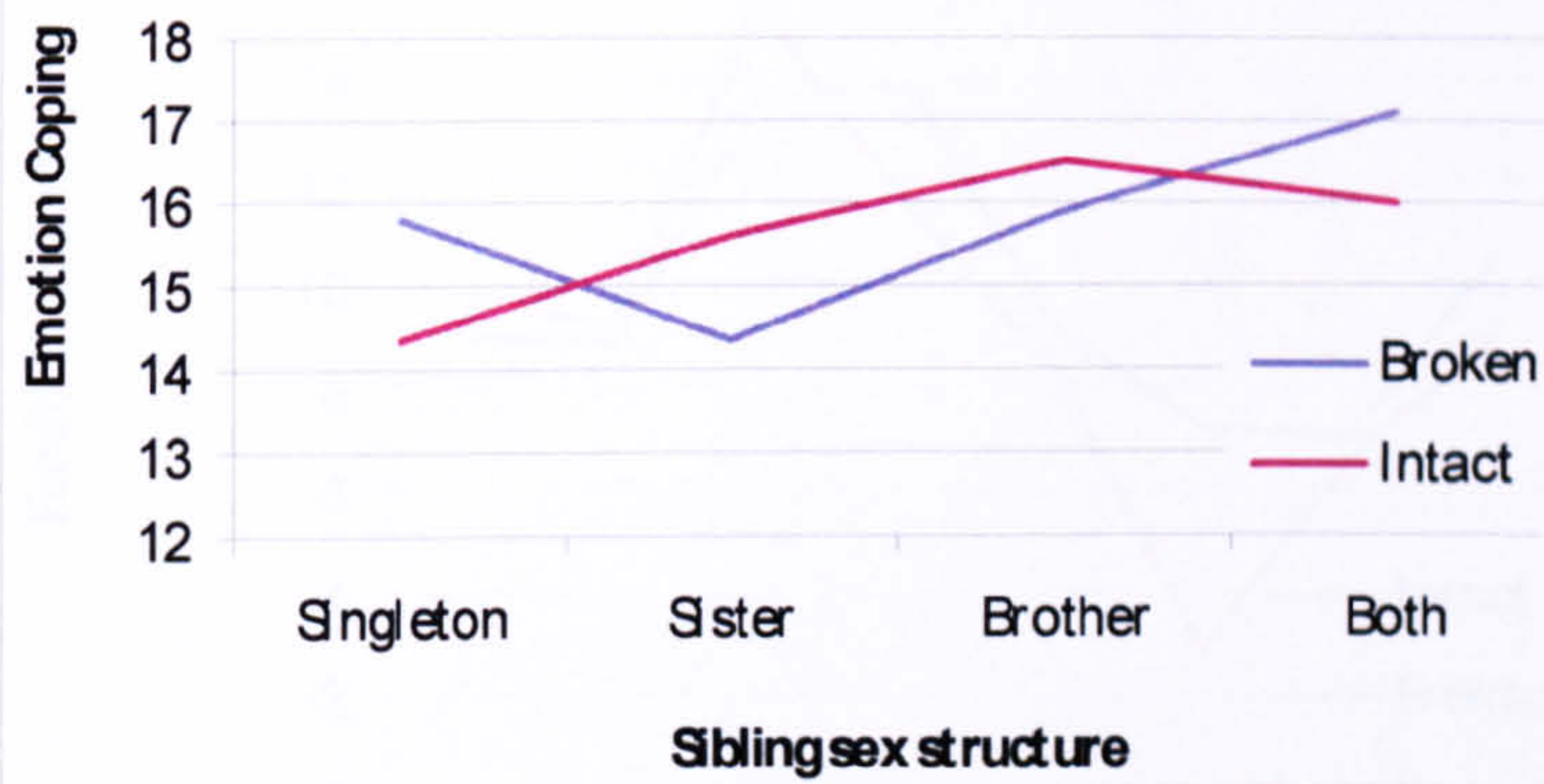
Interaction between intact/ non-intact home and sibling sex structure on family relations



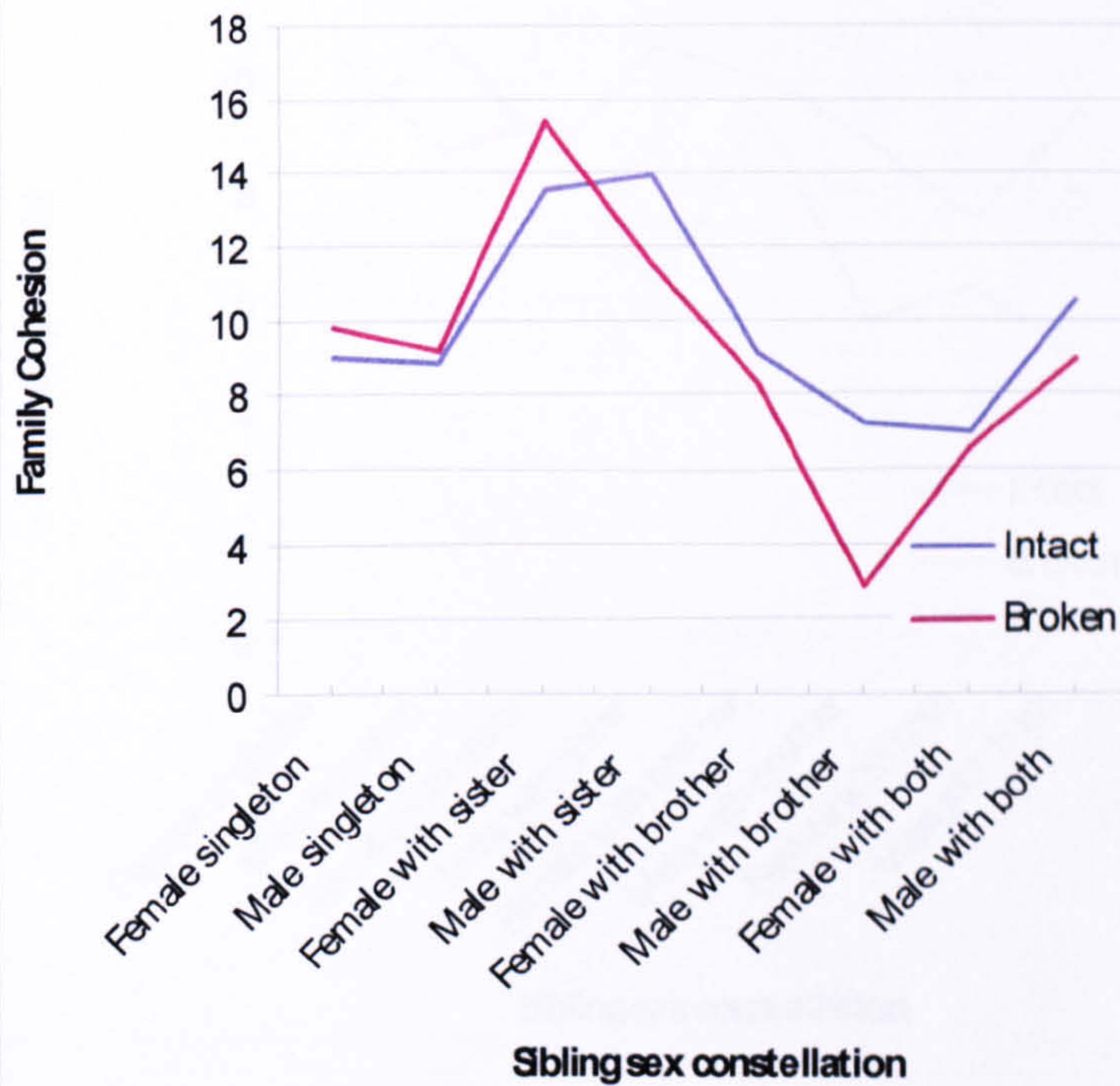
Interaction between intact/ non-intact home and sibling sex structure on family personal growth



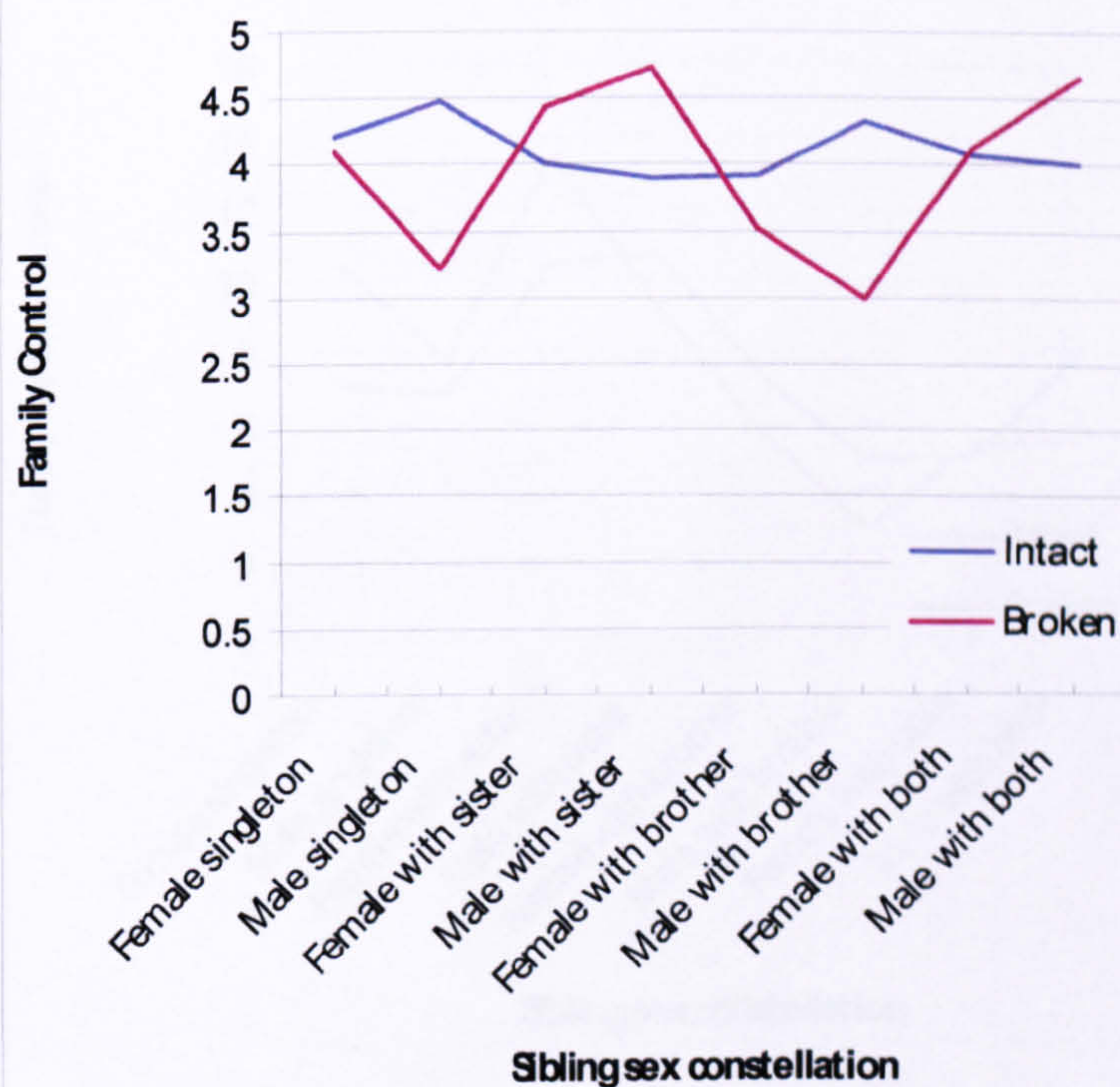
Interaction between intact/ non-intact home and sibling sex structure on emotion coping



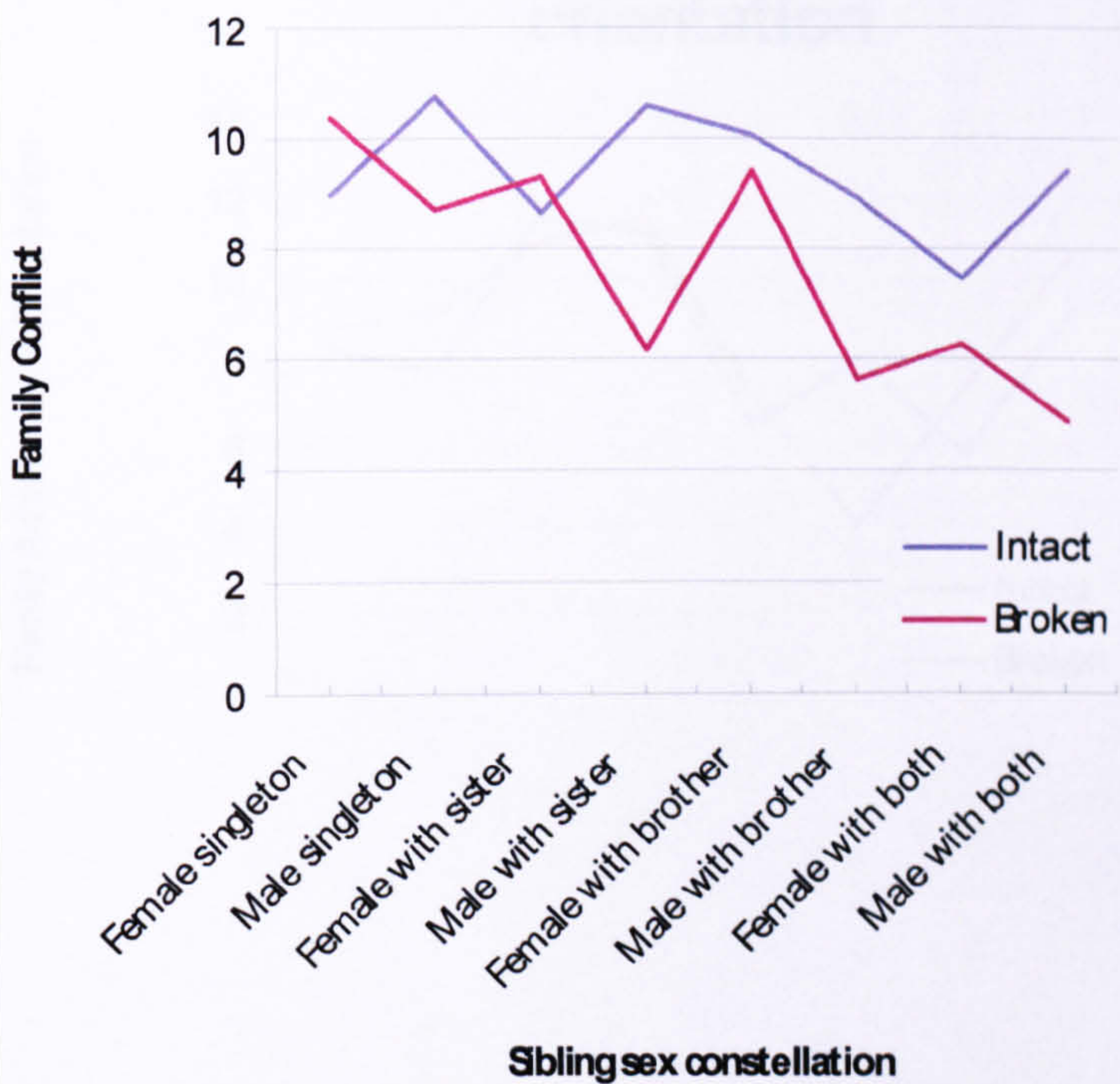
Interaction between intact/ non-intact homes and sibling sex constellation on family cohesion



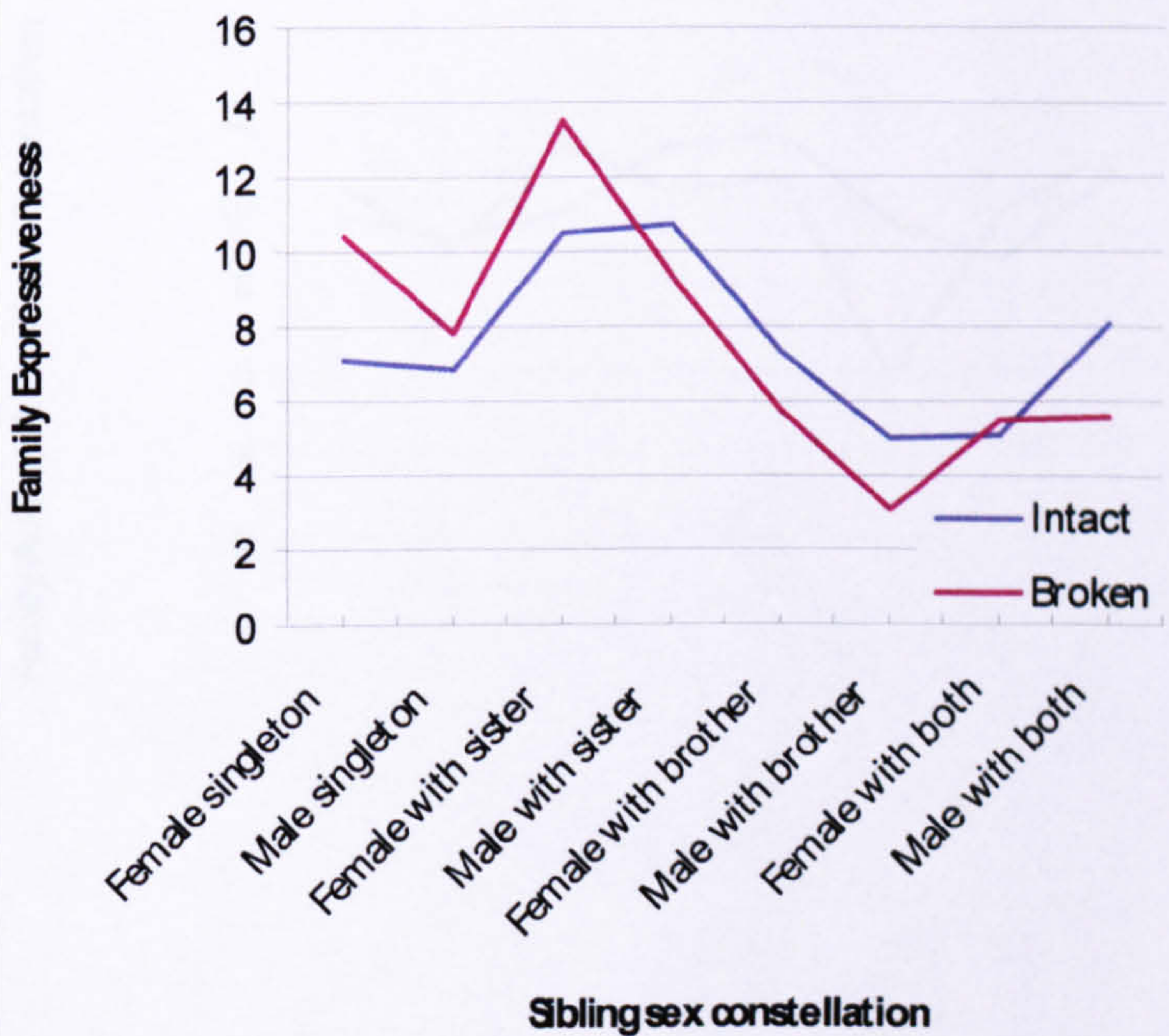
Interaction between intact/ non-intact homes and sibling sex constellation on family control



Interaction between intact/ non-intact homes and sibling sex constellation on family conflict



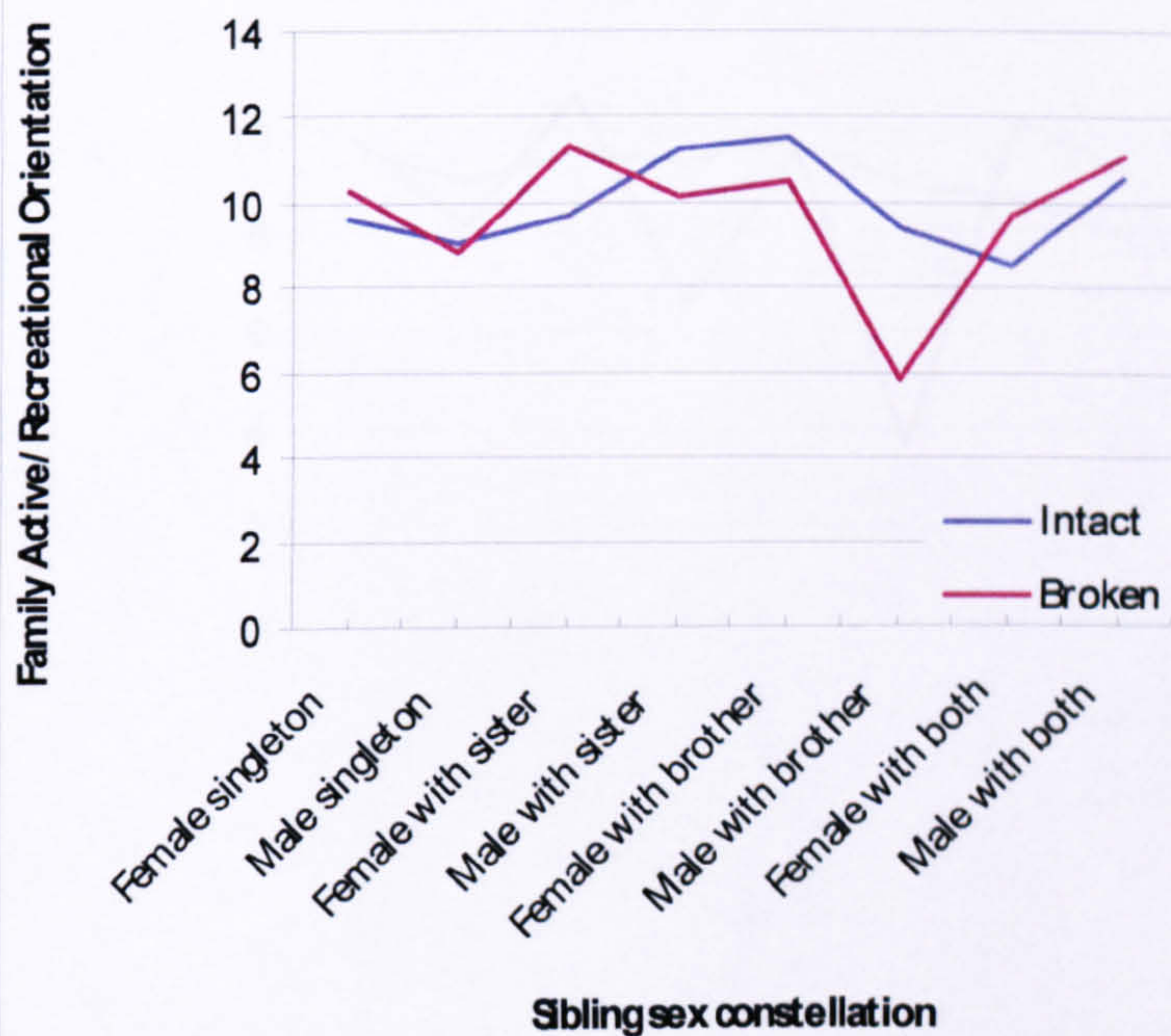
Interaction between intact/ non-intact homes and sibling sex constellation on family expressiveness



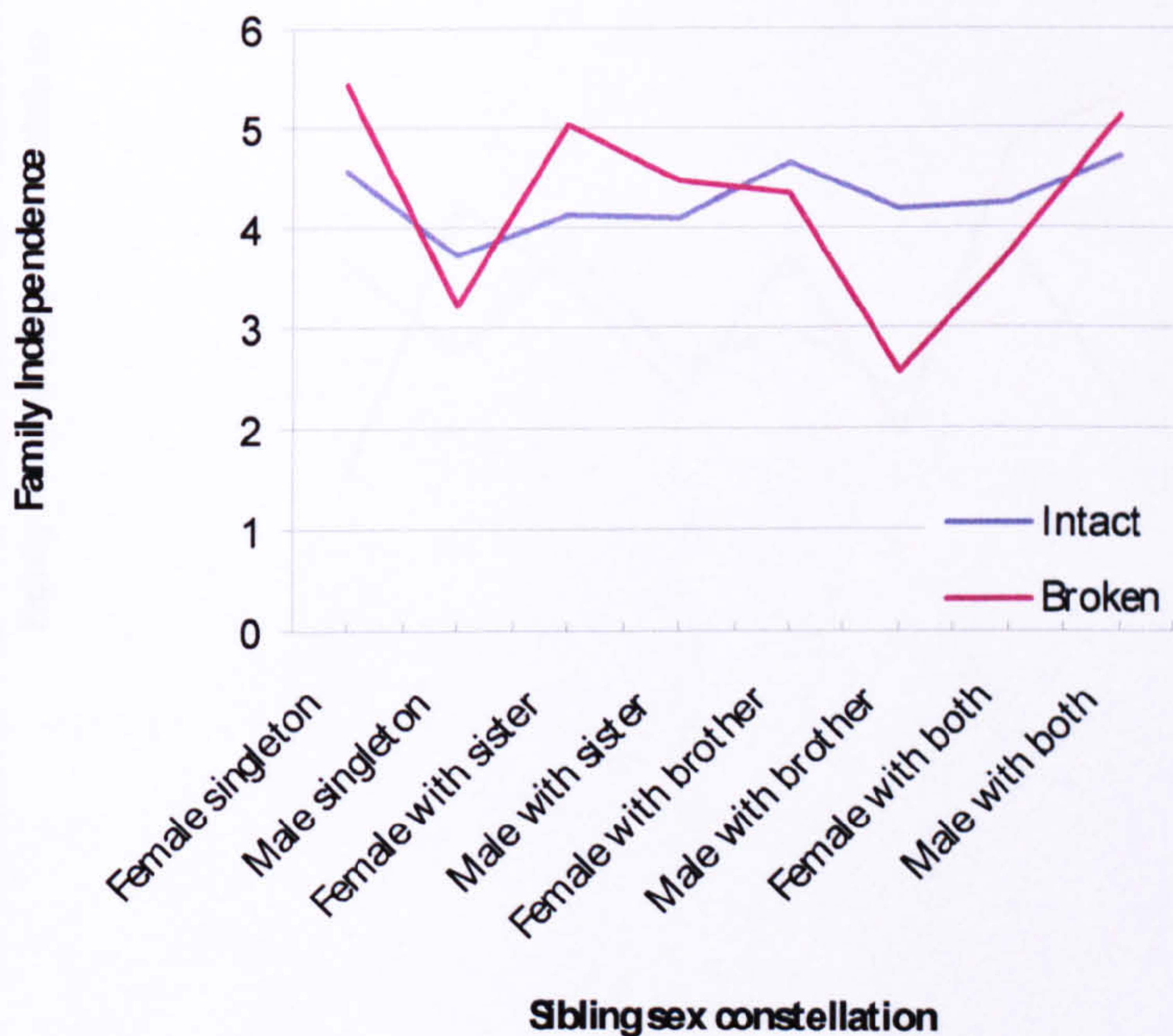
Interaction between intact/ non-intact homes and sibling sex constellation on family achievement orientation



Interaction between intact/ non-intact homes and sibling sex constellation on family active/ recreational orientation



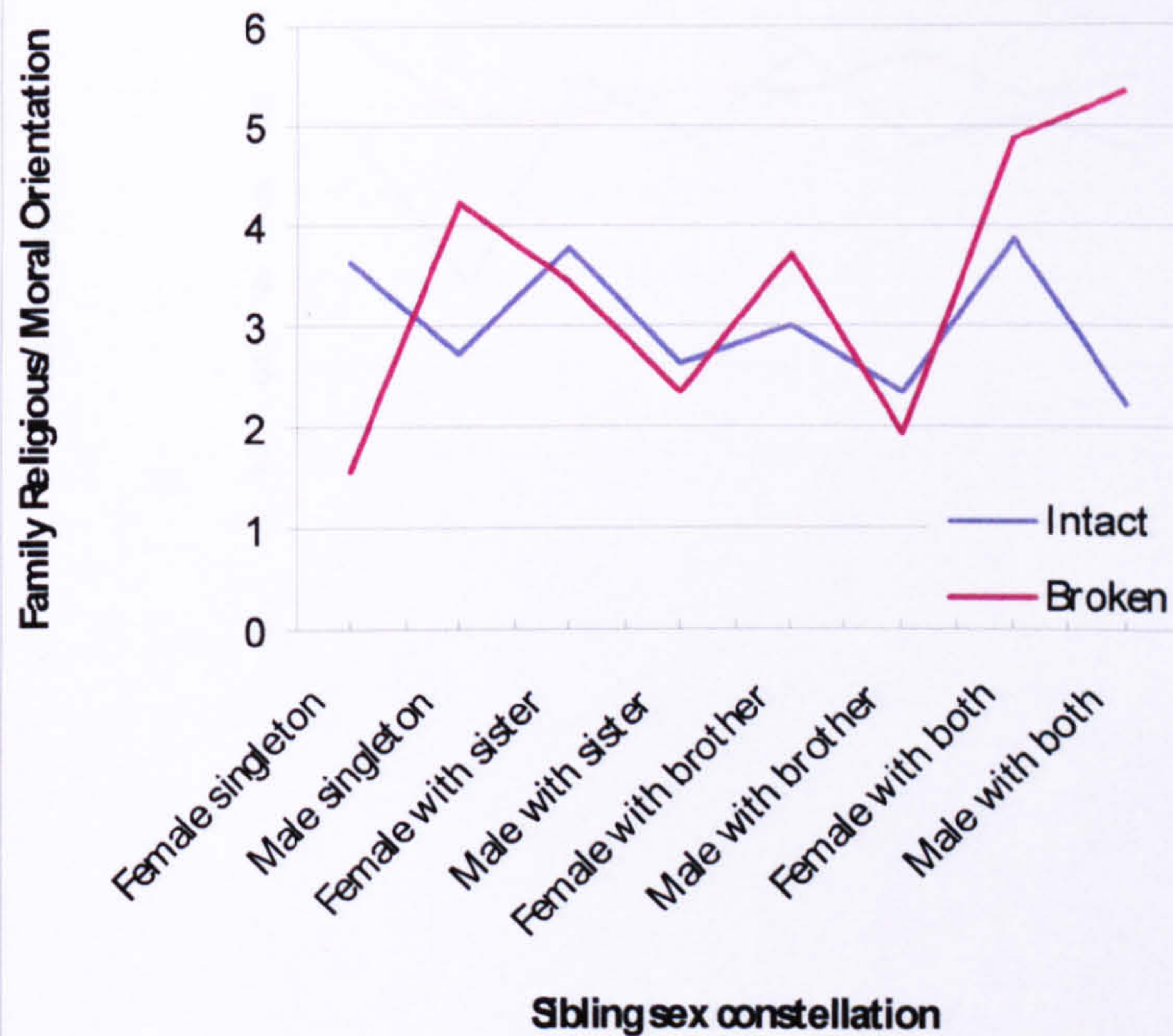
Interaction between intact/ non-intact homes and sibling sex constellation on family independence



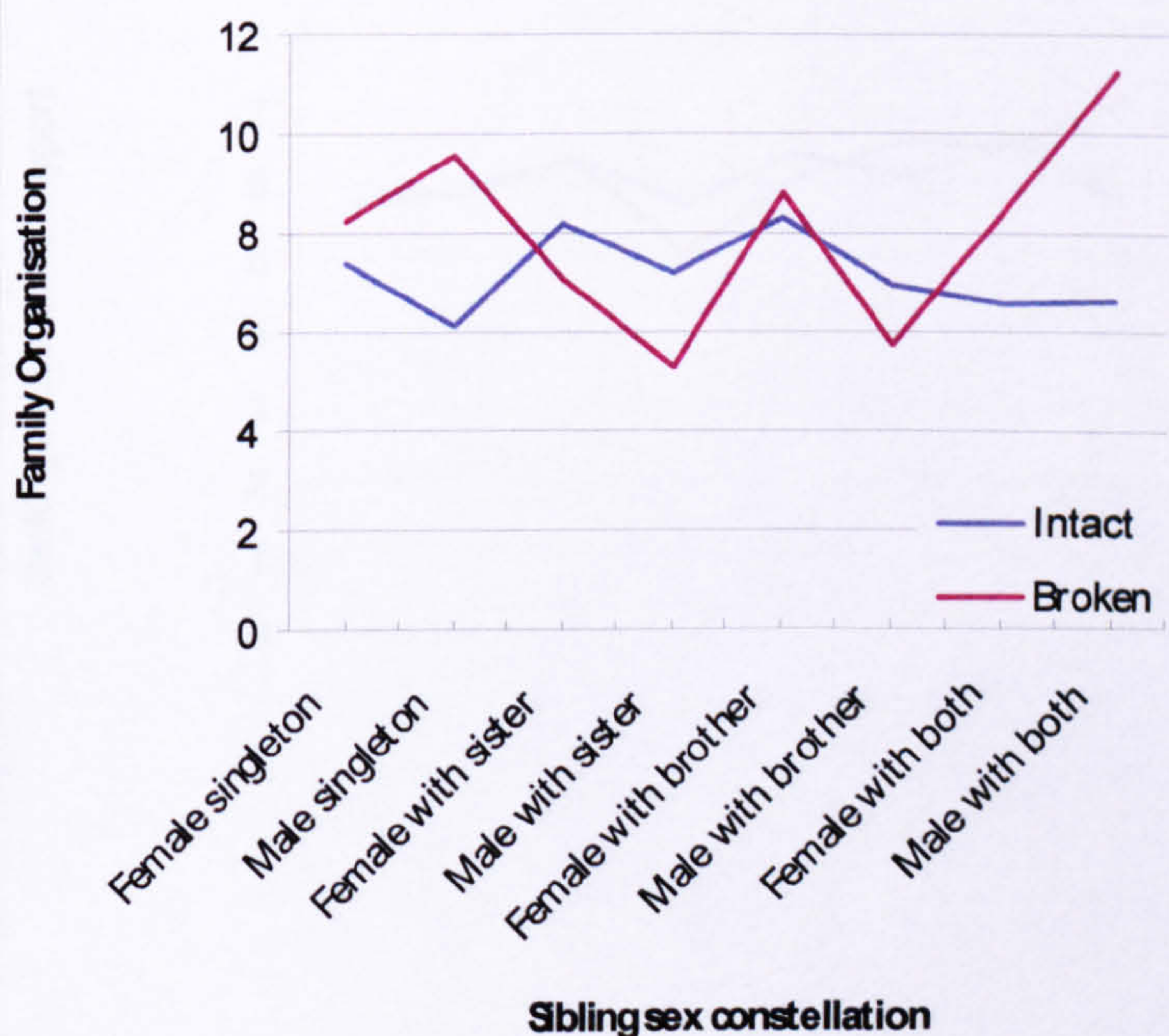
Interaction between intact/ non-intact homes and sibling sex constellation on family intellectual/ cultural orientation



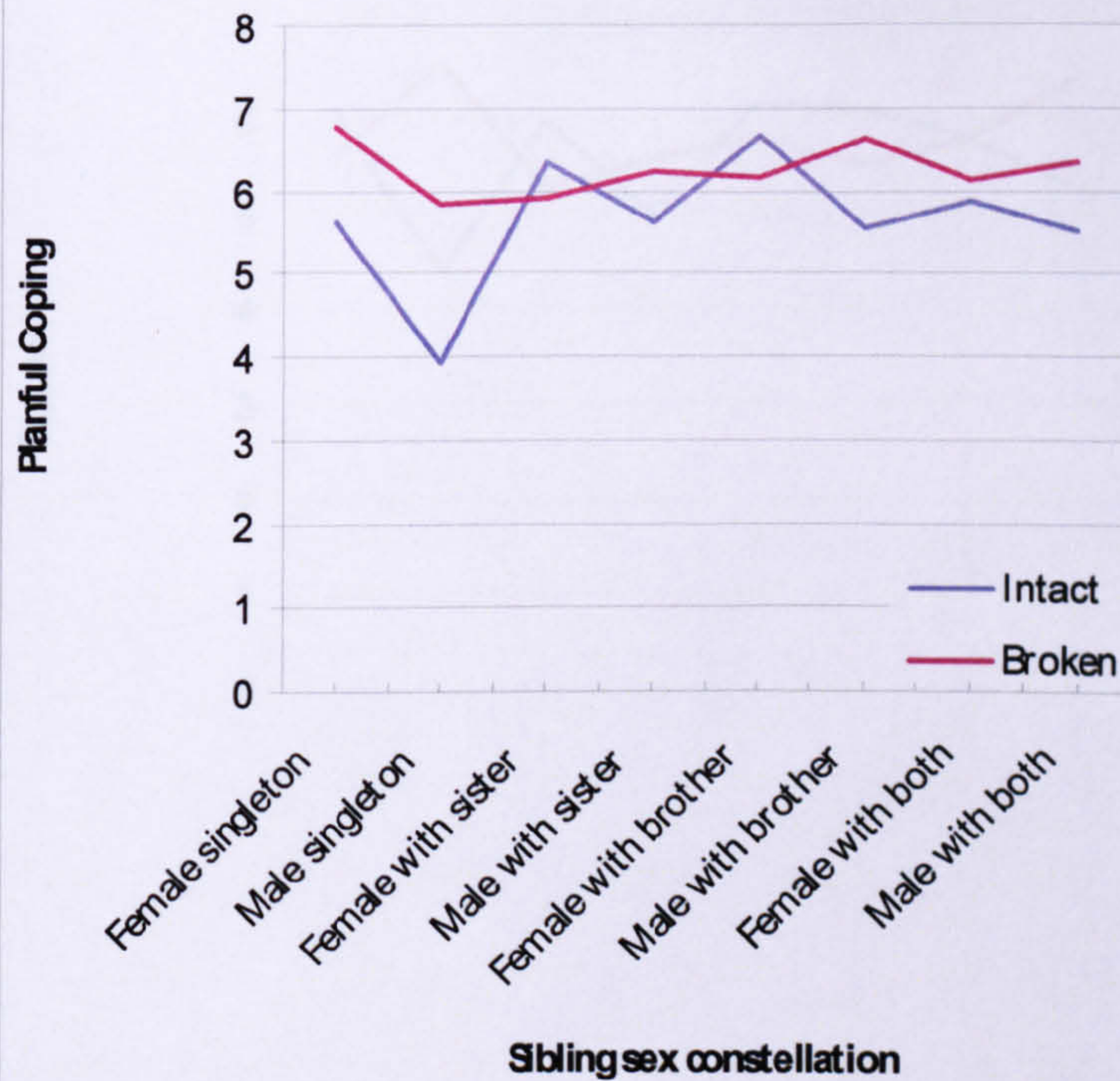
Interaction between intact/ non-intact homes and sibling sex constellation on family religious/ moral orientation



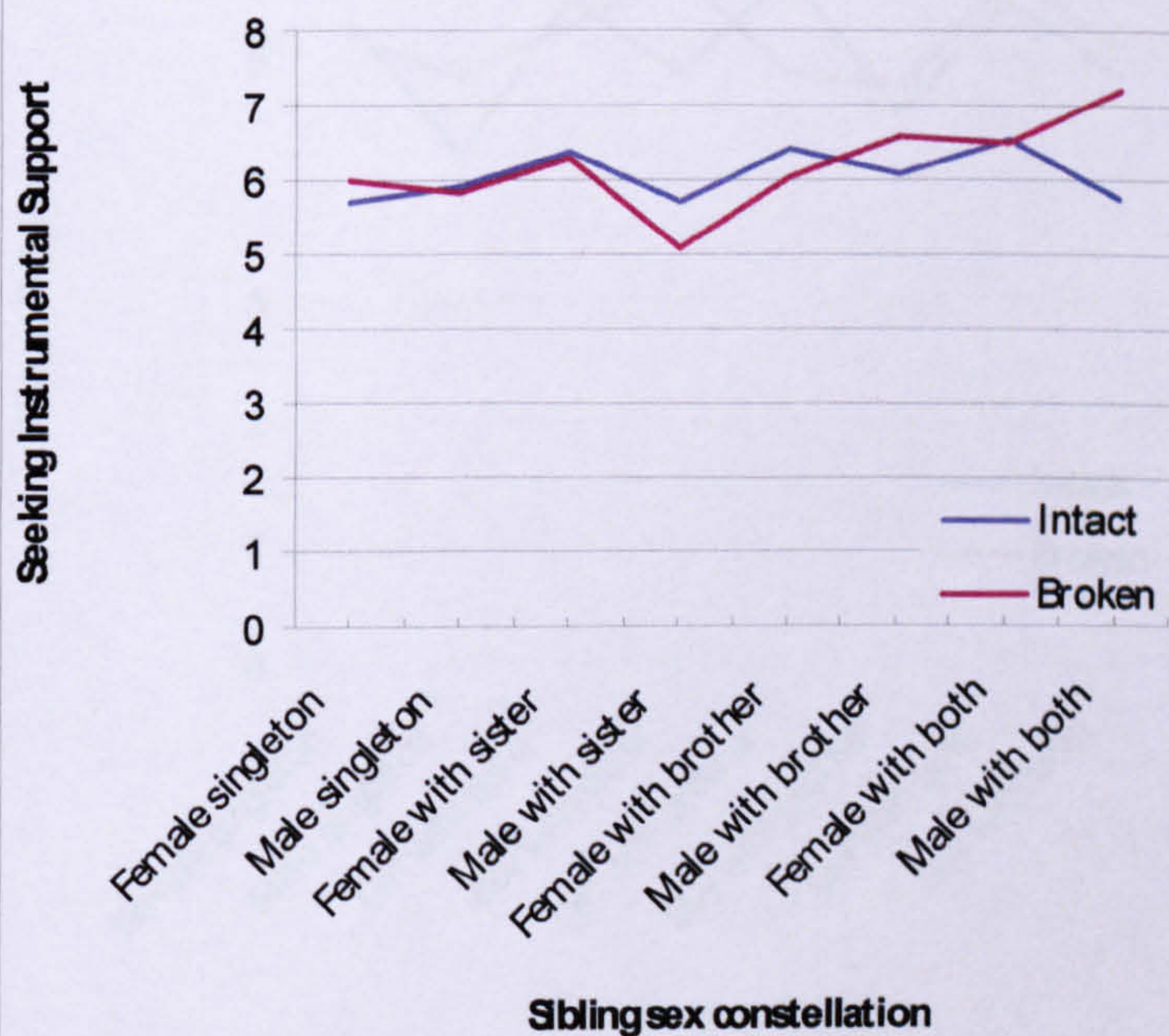
Interaction between intact/ non-intact homes and sibling sex constellation on family organisation



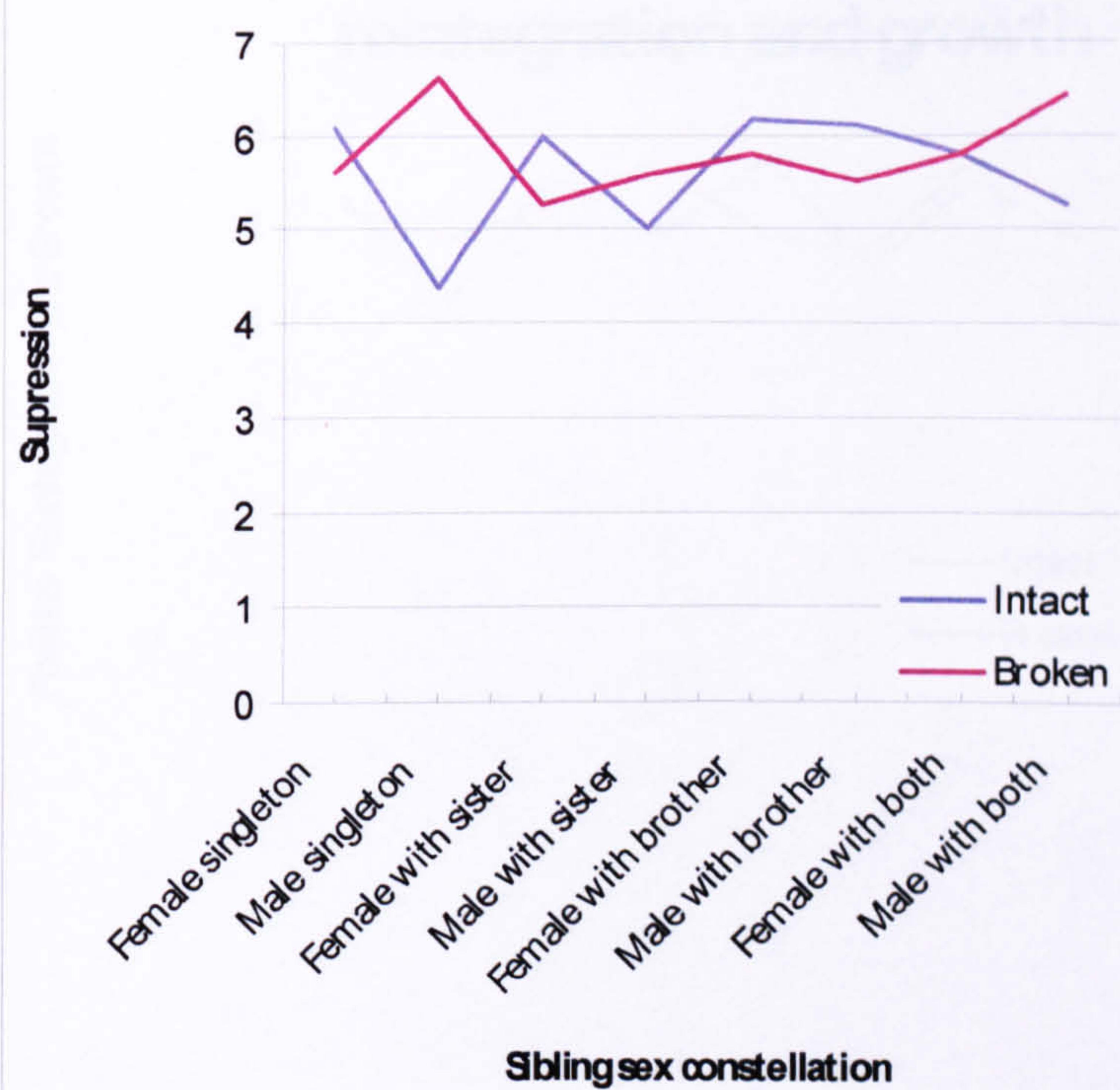
Interaction between intact/ non-intact homes and sibling sex constellation on planful coping



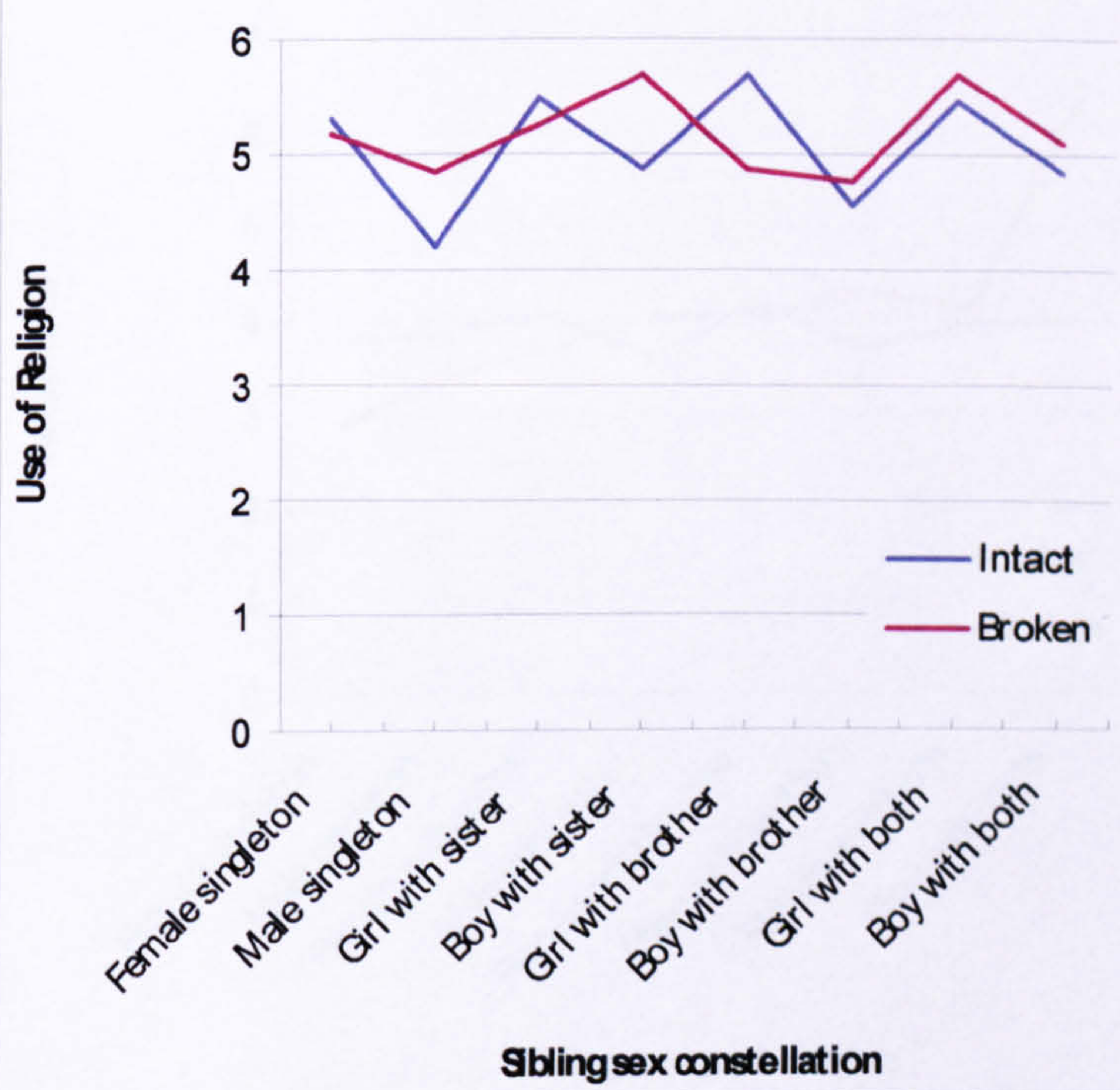
Interaction between intact/ non-intact homes and sibling sex constellation on seeking instrumental support



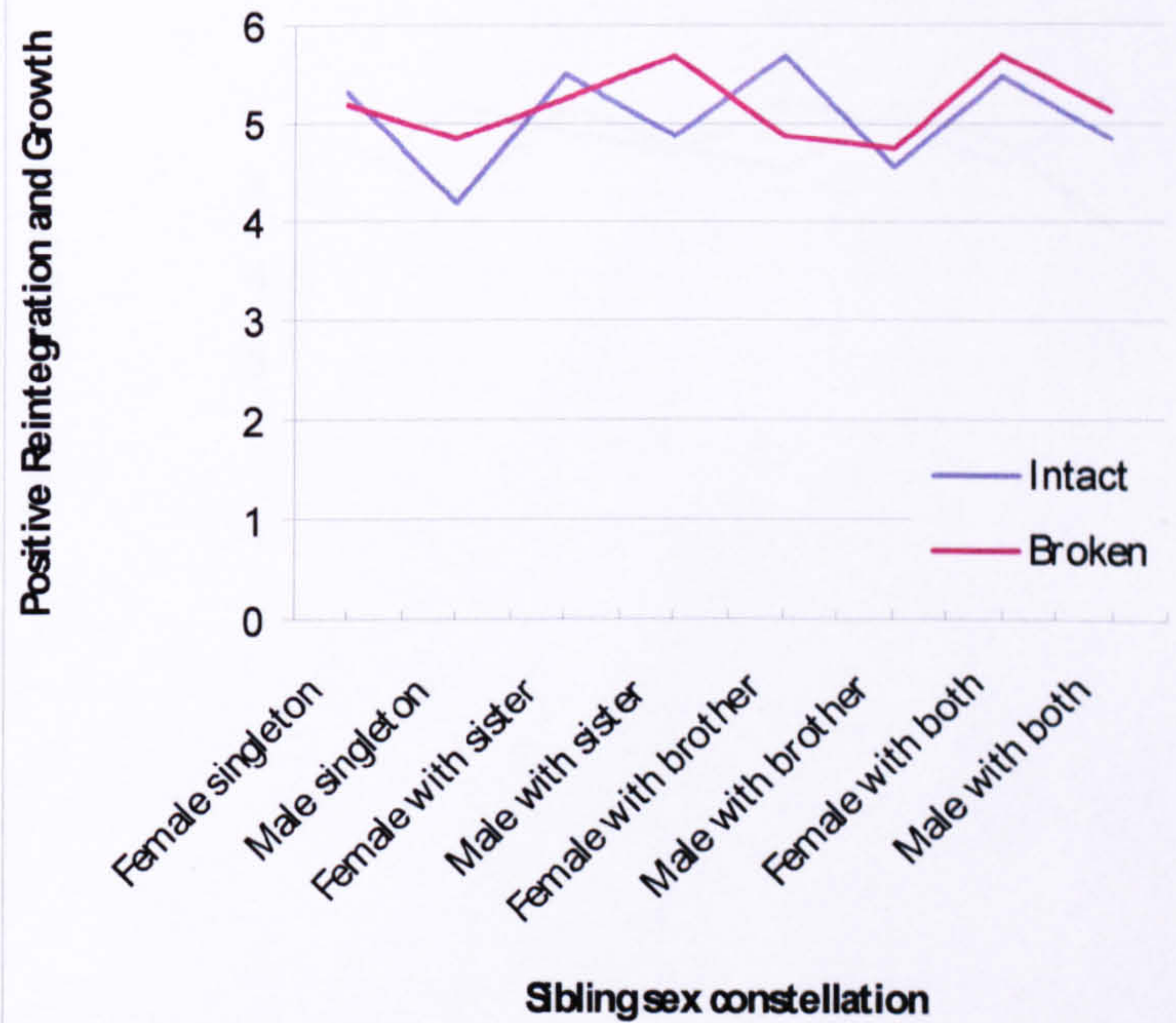
Interaction between intact/ non-intact homes and sibling sex constellation on supression



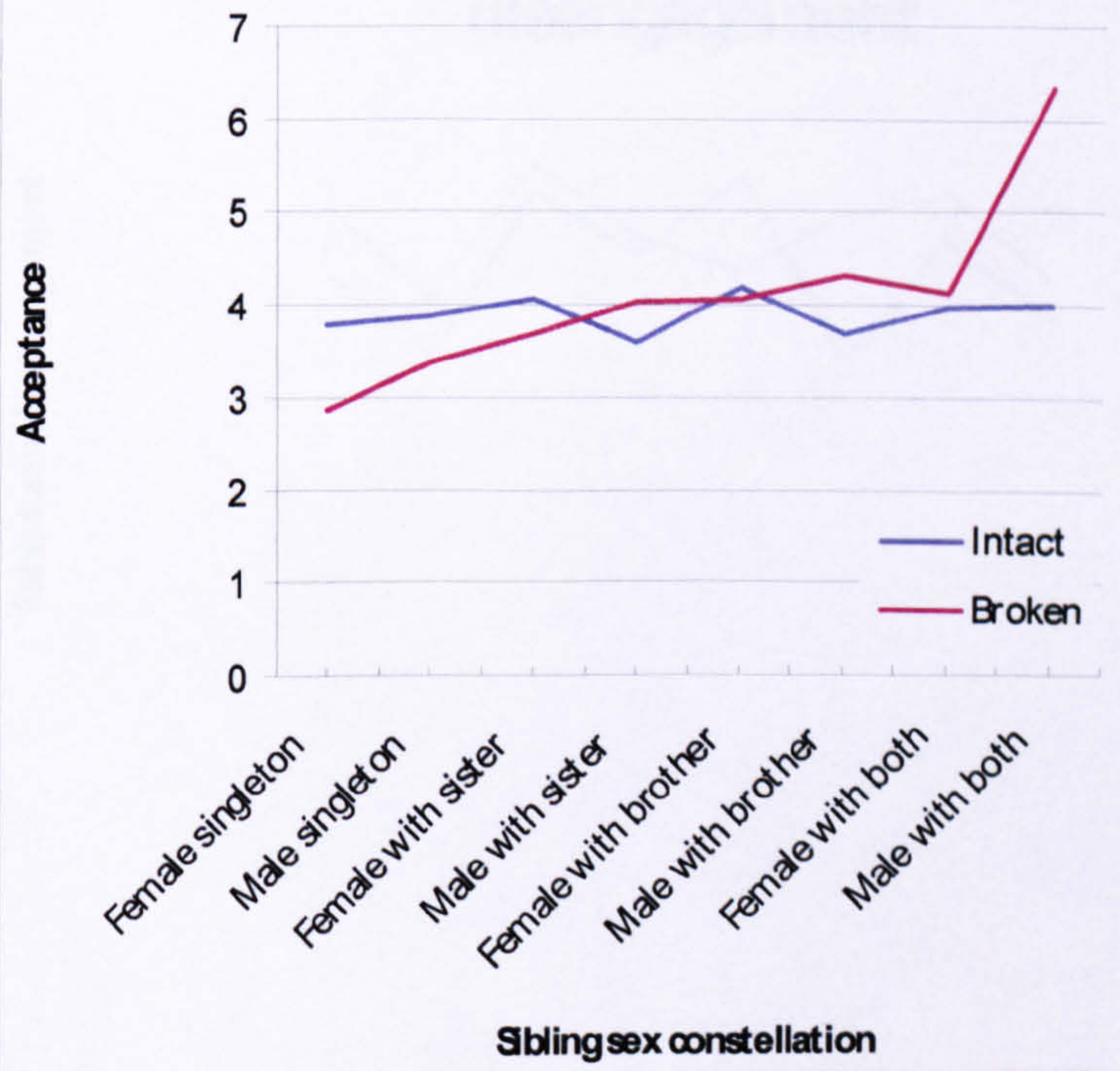
Interaction between intact/ non-intact homes and sibling sex constellation on use of religion



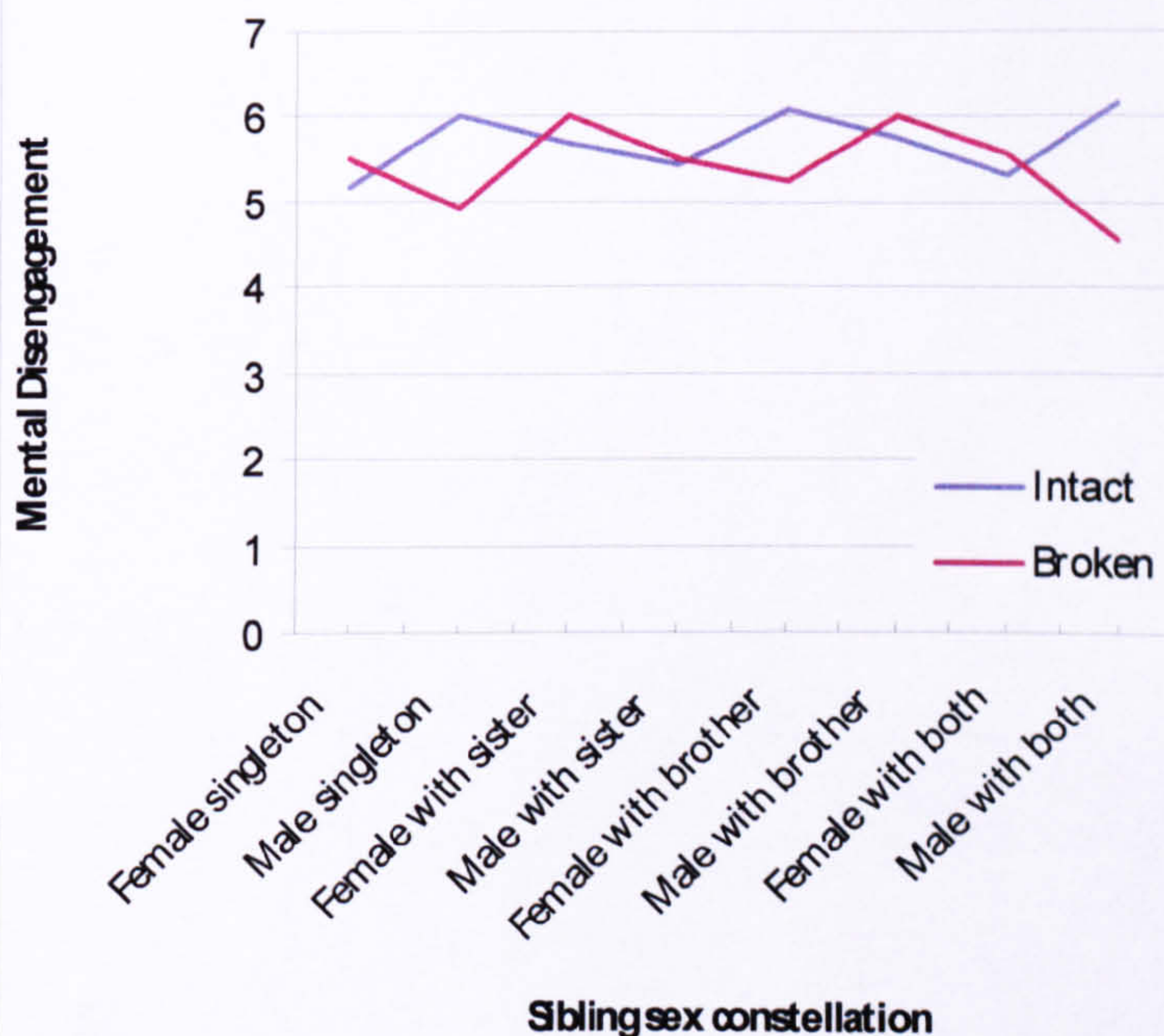
Interaction between intact/ non-intact homes and sibling sex constellation on positive reintegration and growth



Interaction between intact/ non-intact homes and sibling sex constellation on acceptance



Interaction between intact/ non-intact homes and sibling sex constellation on mental disengagement



Interaction between intact/ non-intact homes and sibling sex constellation on behavioural disengagement

